Upper Endoscopy for Gastroesophageal Reflux Disease (GERD) and Upper Gastrointestinal (GI) Symptoms

Health Technology Assessment Program

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Upper Endoscopy for Gastroesophageal Reflux Disease (GERD) and Upper Gastrointestinal (GI) Symptoms

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Nature and Purpose of Technology Assessments

This technology assessment report is based on research conducted by a contracted technology assessment center, with updates as contracted by the Washington State Health Care Authority. This report is an independent assessment of the technology question(s) described based on accepted methodological principles. The findings and conclusions contained herein are those of the investigators and authors who are responsible for the content. These findings and conclusions may not necessarily represent the views of the HCA/Agency and thus, no statement in this report shall be construed as an official position or policy of the HCA/Agency.

The information in this assessment is intended to assist health care decision makers, clinicians, patients and policy makers in making sound evidence-based decisions that may improve the quality and cost-effectiveness of health care services. Information in this report is not a substitute for sound clinical judgment. Those making decisions regarding the provision of health care services should consider this report in a manner similar to any other medical reference, integrating the information with all other pertinent information to make decisions within the context of individual patient circumstances and resource availability.

Acknowledgements

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EXECUTIVE SUMMARY

Background

Gastroesophageal Reflux Disease

Gastroesophageal reflux disease (GERD) is the most common outpatient gastrointestinal diagnosis in the United States, with a prevalence of 10% to 58.3% and an annual incidence of 0.38% to 0.45% (Lacy 2010; Sobieraj 2011). The Montreal consensus panel, an international Consensus Group tasked with developing a global definition and classification of GERD, reached strong consensus in defining GERD as "a condition which develops when the reflux of stomach contents causes troublesome symptoms and/or complications" (Vakil 2006, p. 1903). Common symptoms of GERD include heartburn (defined as a burning sensation behind the breastbone), regurgitation and chest pain (Vakil 2006). Obesity; the presence of a hiatal hernia; and the use of estrogen, nitrates, anticholinergics, and tobacco products are considered risk factors for GERD (Lacy 2010). Gastroesophageal reflux disease can lead to a decreased quality of life and to more severe conditions such as esophagitis, Barrett's esophagus, and adenocarcinoma of the esophagus (University of Michigan Health System 2007).

Dyspepsia

Dyspepsia is estimated to range in prevalence in the United States from 2.9 to 34.4% (Sobieraj 2011). The Rome III Committee defines dyspepsia as having one or more of the following symptoms: epigastric pain or burning; postprandial fullness; and/or early satiety (Tack 2006). Other dyspeptic symptoms may include nausea and vomiting, upper abdominal bloating, heart burn, and regurgitation (Goswami 2012). Dyspepsia symptoms are distinguished from GERD as not being "troublesome" enough, referring to the Montreal definition of GERD; however, many authors have used the terms interchangeably.

Diagnostic Procedures

The signs and symptoms of GERD, dyspepsia, and other more severe conditions such as Barrett's esophagus, can be very similar, and diagnostic procedures can be used to establish a diagnosis and rule out other possible conditions. Diagnostic procedures for dyspepsia and GERD can include questionnaires, empiric therapeutic trial; pH monitoring; upper endoscopy; and/or double contrast barium swallow (Lacy 2010).

Key Questions

KQ1. What is the evidence of effectiveness for early treatment strategies that include upper endoscopy compared with empiric medical management?

KQ2. Are there clinical signs and symptoms useful to identify patients for whom early endoscopy is effective to improve health outcomes and/or disease management?

KQ3. For what diagnoses and within what time frames, is repeat endoscopy indicated versus other tests or no follow-up tests for surveillance of disease progression and/or treatment response? Does repeat endoscopy change treatment and outcome?

KQ4. What are the potential harms of performing upper endoscopy in the diagnostic or treatment planning workup of adults with upper GI symptoms? What is the incidence of these harms? Include consideration of progression of treatment in unnecessary or inappropriate ways.

KQ5. What is the evidence that upper endoscopy has differential efficacy or safety issues in sub populations? Including consideration of:

a. **Gender**
b. **Age**
c. **Psychological or psychosocial co-morbidities**
d. **Other patient characteristics or evidence based patient selection criteria, especially comorbidities of diabetes, high BMI, and chronic ingestion of alcohol**
e. **Provider type, setting or other provider characteristics**
f. **Payer / beneficiary type: including worker's compensation, Medicaid, state employees?**

KQ6. What is the evidence of cost and cost-effectiveness of endoscopy compared to other treatment strategies when used in diagnostic or treatment planning workups of adults with upper GI symptoms?

Methods

A systematic review using best evidence methodology was used to search and summarize evidence for Key Questions #1 through #5 as outlined below:

- Completed search of the Medicaid Evidence-based Decisions Project primary evidence sources.
- Existing high quality systematic reviews (SRs) and technology assessments (TAs) summarized for each Key Question.
- If there were two or more comparable SRs or TAs identified and one was more recent, of better quality, or more comprehensive, then the other review(s) were excluded.
- Additional search of the MEDLINE® database completed to identify subsequently published studies. Individual studies published after the search dates of the last high quality review were appraised and synthesized with the results of the high quality SRs.
- If there were no high quality reviews identified, a search, appraisal, and summary of primary individual studies was completed for the last 10 years (January 2002 to January 2012).

Evidence – Inclusion Criteria and Quality Assessment

For this WA HTA report, a search was conducted to identify published SRs and individual studies (from January 2002 to January 2012) in the MEDLINE® database. An additional search using the Medicaid Evidence-based Decisions (MED) Project primary sources was completed to identify SRs and TAs (from January 2002 to January 2012).

Articles were included if the details on the study population incorporated abstractable information about adults presenting with initial complaints of upper gastrointestinal (GI) symptoms, dyspepsia or GERD. For Key Questions #1, #3, #4, and #5, SRs, TAs, meta-analyses, randomized controlled trials (RCTs), and controlled clinical trials or comparative observational studies were included. For Key Question #2, the same articles were included in addition to non-comparative cohort studies and case series. For Key Question #6, all relevant

economic evaluations, cost-effectiveness analyses, and economic simulation models were included. Exclusion criteria includes long term treatment of GERD, confirmed Barrett's esophagus diagnosis, wireless capsule endoscopy, previous GI and anti-reflux surgeries, and studies exclusively containing Asian populations.

The methodological quality of the included studies was assessed using standard instruments developed and adapted by the Center for Evidence-based Policy and the MED Project that are modifications of the systems used by the National Institute for Health and Clinical Excellence (NICE) and the Scottish Intercollegiate Guidelines Network (SIGN) (NICE 2009; SIGN 2009). Each study was assigned a rating of good, fair, poor based on its adherence to recommended methods and potential for biases. The methodological quality of the economic studies was rated (good, fair, poor) using a standard instrument developed and adapted by the Center for Evidence-based Policy and the MED Project that is based on modifications of the BMJ (Drummond 1996), the Consensus on Health Economic Criteria list (Evers 2005), and the NICE economic evaluation checklist (NICE 2009). The overall strength of evidence was rated (high, moderate, low) using a modified version of the Grading of Recommendations Assessment, Development and Evaluation (GRADE) system (Guyatt 2008).

Guidelines

A search for relevant clinical practice guidelines was conducted using a list of predetermined high quality sources from the MED Project and additional relevant specialty organizations and associations. Guidelines included were limited to those published after 2006. The methodological quality of the guidelines was assessed using an instrument adapted from the Appraisal of Guidelines Research and Evaluation (AGREE) Collaboration (AGREE Next Steps Consortium 2009). Each guideline was assigned a rating of good, fair, poor based on the adherence to recommended methods and the potential for biases.

Policies

At the direction of the WA Health Technology Assesment (WA HTA) program, select payer policies were searched and summarized. Aetna, Blue Cross Blue Shield, GroupHealth, and Medicare National and Local Coverage Determinations (NCD and LCD, respectively) were searched using the payers' websites.

Findings

The MED Project primary sources identified two SRs and TAs and nine economic studies. For the Key Questions, the MEDLINE® search retrieved 1,316 citations, of which one review and seven articles representing seven studies were included.

KQ1. What is the evidence of effectiveness for early treatment strategies that include upper endoscopy compared with empiric medical management?

One good quality systematic review (Delaney 2005) included two separate meta-analyses, one of early endoscopy versus empiric PPI and one of early endoscopy versus test-and-treat for *H. pylori.* The first meta-analysis included five RCT's and found no difference in symptomatic cure at 12 months between endoscopy and PPI arms. The second meta-analysis, also including five RCT's of which one (Duggan 1999) was in the first

MA, was first done by pooling trial-level data. This analysis found no difference in effect (RR 0.95, 95% CI 0.79 to 1.15), but a high degree of statistical heterogeneity. When an alternate analysis of these same five studies was done using individual patient data (IPD), there was no longer statistical heterogeneity and a small but statistically significant benefit to upper endoscopy emerged (Peto OR 0.75, 95% CI 0.58 to 0.96; RR 0.95, 95% CI 0.92 to 0.99).

A single fair quality prospective cohort study (Madan 2005) of 70 patients found that 24-hour pH monitoring is the most accurate single diagnostic test for GERD, when a concordance of three separate tests is taken as the gold standard. However, the authors note that there are barriers to its widespread use including invasiveness, cost, and availability. A serial application of an omeprazole challenge test, endoscopy, and finally histopathology achieves a sensitivity of 100% for GERD diagnosis.

Overall, the evidence does not point to a clinically relevant benefit of prompt upper endoscopy over test and treat strategies or empiric PPI therapy for uninvestigated GERD symptoms in the primary care setting.

Overall strength of evidence: High

KQ2. Are there clinical signs and symptoms useful to identify patients for whom early endoscopy is effective to improve health outcomes and/or disease management?

One good quality systematic review of 57,363 patients in 17 prospective cohort studies (Vakil 2006) found that alarm symptoms, clinical opinion, and computer modeling programs based on symptom questionnaires were all unreliable predictors of gastrointestinal malignancy. Sensitivity ranged from 0% to 83% while specificity varied from 40% to 98%. A good quality prospective cohort study (Marmo 2005) found cancer in 0.9% of patients presenting with uncomplicated dyspepsia (i.e. without alarm symptoms) and the findings suggest that risk is correlated with age >35 for males and >57 for females. A fair quality prospective cohort study (Rossi 2002) determined that ASGE guideline criteria were poorly correlated with clinically relevant endoscopic findings, although their presence does marginally increase the pre-test probability of endoscopy (from 45% to 47%) and their absence lowers it (from 45% to 29%). A second fair-quality prospective cohort study (Bowrey 2005) in the setting of open-access endoscopy found that 15% of the patients with esophagogastric carcinoma did not present with alarm symptoms and may have suffered delayed diagnosis without early endoscopy; however, there was an unusually high prevalence (3%) of cancer in the study population. Finally, a fair-quality prospective cohort study of primary care patients with uninvestigated dyspepsia (Veldhuyzen van Zanten 2006) found that Barrett's esophagus was most likely in patients who were male, >50 years old, had symptoms of at least 5-10 years duration, and suffered predominantly from reflux.

Vakil and colleagues (2006) suggest that, in the absence of compelling predictors, the concept of "alarm symptoms" should not be abandoned at this time. They suggest age greater than 55 as "the most logical alternative strategy… because the incidence of upper GI malignancy is negligible in Western populations at younger ages and only rises in prevalence above the age of 55 years" (p. 398). Marmo and colleagues (2005) suggest that age should be lower (35) for males and could be higher (57) for females.

Overall strength of evidence: Moderate

KQ3. For what diagnoses and within what time frames, is repeat endoscopy indicated versus other tests or no follow-up tests for surveillance of disease progression and/or treatment response? Does repeat endoscopy change treatment and outcome?

Only one study, a prospective cohort study of good quality (Westbrook 2005), addressed the question of repeat endoscopy in patients who initially presented with dyspeptic symptoms and had non-malignant endoscopic findings. About a third of these patients underwent a subsequent endoscopy within nine years of the index study. The results of these later endoscopies are not known; however, patients who had further endoscopy were neither more nor less likely than other patients to be symptomatic eight to nine years after the index study (χ^2=0.6, df=1, P > 0.05). Overall, evidence is insufficient to suggest repeat endoscopy to any patients with initial dyspepsia who have non-malignant findings on their index endoscopy.

Overall strength of evidence: Low

KQ4. What are the potential harms of performing upper endoscopy in the diagnostic or treatment planning workup of adults with upper GI symptoms? What is the incidence of these harms? Include consideration of progression of treatment in unnecessary or inappropriate ways.

Unfortunately there were no studies that could be included for this Key Question. All but one of the systematic reviews, meta-analyses, and economic evaluations (Ford 2005) neglected to factor harms of endoscopy into their reports. According to the authors of one economic evaluation (Spiegel 2002), most harms of endoscopy are cardiorespiratory in nature; that is, related to the procedure sedation rather than the endoscope itself. These authors used a 0.02% incidence of severe harms and modeled their economic assumptions on the surgical repair of perforation.

Our search identified no data on harms associated with empiric acid-suppression or *H. pylori* test-and-treat.

Overall strength of evidence: Insufficient

KQ5. What is the evidence that upper endoscopy has differential efficacy or safety issues in sub populations? Including consideration of:

g. Gender

h. Age

i. Psychological or psychosocial co-morbidities

j. Other patient characteristics or evidence based patient selection criteria, especially comorbidities of diabetes, high BMI, and chronic ingestion of alcohol

k. Provider type, setting or other provider characteristics

l. Payer / beneficiary type: including worker's compensation, Medicaid, state employees?

The search uncovered no evidence related to most of the subpopulations named in this Key Question. Age was the only factor associated with differential effectiveness in one good quality meta-analysis (Ford 2005). The authors of this study performed subgroup analyses based on age, gender, predominant symptom, and

presence of *H. pylori*. There was a small but statistically significant benefit of endoscopy in patients 50 years of age and older (RR=0.90, 95% CI 0.82 to 1.00, $p < 0.05$); no other associations were found. A good-quality prospective cohort study (Marmo 2005) found that patients with malignancy were on average 20 years older than patients without malignancy ($p < 0.001$). A fair-quality prospective cohort study (Bowrey 2005) also found increasing prevalence of malignancy with rising age. In a good quality economic evaluation simulation model (Barton 2008), relative effectiveness of interventions was the same in hypothetical 30 year olds as in hypothetical 60 year olds. A poor quality retrospective chart review of VA patients (Connor 2004) failed to find any correlation between significant endoscopic findings (Barrett's esophagus and/or erosive esophagitis) and age, gender, race, or NSAID use.

Overall strength of evidence: Moderate (Age), Insufficient (All others)

KQ6. What is the evidence of cost and cost-effectiveness of endoscopy compared to other treatment strategies when used in diagnostic or treatment planning workups of adults with upper GI symptoms?

With the exception of empiric therapy for US 30 year olds, all five good quality studies (Barkun 2010; Barton 2008; Makris 2003; Spiegel 2002; You 2006), one of two fair quality studies (Duggan 2008), and one of three poor quality studies (Klok 2005) favored *H. pylori* test-and-treat as the most cost-effective strategy for adults with uninvestigated symptoms of dyspepsia and/or GERD.

Only two studies, a second-order simulation model and a decision analysis (Barton 2008; Spiegel 2002, respectively), both of good quality, evaluated the cost-effectiveness of different management strategies for new upper gastrointestinal symptoms in a US population. In the Barton study (2008), empiric PPI was the strategy of choice for 30 year old patients, and test-and-treat for *H. pylori* was the most cost-effective intervention for 60 year olds. Spiegel and colleagues (2002) looked only at patients less than 45 years of age, and determined that adding a 6-week trial of PPI to the test-and-treat strategy improved its cost-effectiveness. A good quality economic evaluation of Canadian individual patient data (Barkun 2010) concluded that no one strategy was the most clearly cost-effective, but at a clinically relevant willingness-to-pay threshold of CAN$30,000 to 70,000 per quality adusted life year (QALY), omeprazole treatment based on the CanDys protocol (which incorporates test-and-treat for those without heartburn or reflux as the predominant symptom) was the most cost-effective. Two other good quality models (Makris 2003; You 2006) also favored the test-and-treat approach, along with one fair and one poor quality RCT (Duggan 2008; Klok 2005, respectively).

One fair quality decision analysis (García-Altés 2005) favored a screening questionnaire followed by prompt endoscopy for high-risk patients. Two poor quality RCTs (Giannini 2008; Kjeldsen 2007) found empiric PPI to be the most cost-effective alternative, but did not include comparison to *H. pylori* testing and treatment. There were no economic studies that found prompt endoscopy to be the most cost-effective intervention.

Overall strength of evidence: Moderate

Guidelines

Three guidelines (American Gastroenterological Association (AGA) 2008; American Society for Gastrointestinal Endoscopy (ASGE) 2007a; ASGE 2007b) were identified in relation to the role of endoscopy for the diagnosis

and early management of dyspepsia and GERD. An additional guideline specifically related to modifications in endoscopic practice for the elderly was identified from the ASGE (2006).

Role of Endoscopy in the Diagnosis and Management of GERD

The AGA (2008) guideline, rated as good quality, recommends endoscopy to evaluate patients who have not responded to empirical trial of twice-daily PPI therapy and who have suspected esophageal GERD symptoms. The AGA (2008) recommends against routine endoscopy for patient with GERD for assessment of disease progression, and finds insufficient evidence for routine upper endoscopy to reduce mortality from esophageal cancer.

The ASGE (2007a) guideline, rated as fair quality, recommends that GERD can be diagnosed based on typical symptoms alone without the need for endoscopy, except in patients with alarm symptoms. In addition, the ASGE (2007a) recommends endoscopy for evaluation of patients for the screening of Barrett's esophagus as clinically indicated, for patients with suspected extra-esophageal manifestations of GERD, or with recurrent symptoms after endoscopic or surgical antireflux procedures.

The ASGE (2006) guideline, rated as poor quality, recommends that endoscopy only be conducted in an elderly population when the results will influence clinical management or outcomes. The guideline states that endoscopy preparation does not differ for geriatric populations, and that intensified monitoring may be appropriate for many elderly patients.

Role of Endoscopy in the Diagnosis and Management of Dyspepsia

The ASGE (2007b) guideline, rated as fair quality, recommends that patients between the age 45 to 55 years who have new onset dyspepsia and those who have alarm features should undergo an endoscopy. For patients without alarm features for which there is clinical suspicion of malignancy, the ASGE (2007b) guideline recommends endoscopy should be considered. For patients that are younger than 50 years old and are *H pylori* negative, the ASGE (2007b) guideline recommends an initial endoscopy or a short trial of PPI acid suppression.

Policy Considerations

At the direction of WA HTA, this review searched for Medicare, Aetna, Regence BCBS, and GroupHealth policies addressing coverage of upper endoscopy for patients with symptoms of GERD. A Medicare NCD for "endoscopy" allows coverage of "endoscopic procedures when reasonable and necessary for the individual patient" (Centers for Medicare and Medicaid Services (CMS) 2012). Medicare contractor LCDs may further define criteria constituting reasonable and necessary use of the procedure. However, there are no relevant LCDs applicable to Washington or the Northwest Region (CMS Region X). Among private payers searched, Aetna is the single payer that outlines coverage criteria for upper endoscopy. Aetna's policy sets forth detailed clinical indications for the use of upper endoscopy in the following categories: high risk screening, diagnostic, therapeutic, and sequential or periodic surveillance. The policy excludes coverage of upper endoscopy as experimental and investigational in several explicit circumstances.

Overall Summary

Evidence

There are a variety of options for initiating workup and treatment of patients presenting with uninvestigated dyspepsia and/or GERD symptoms. A good quality systematic review (Delaney 2005) and a fair quality prospective cohort study (Madan 2005) show that non-invasive strategies, such as an empiric trial of PPI or *H. pylori* test and treat, are equally as effective as prompt endoscopy for achieving symptom improvement. A 24-hour esophageal pH study might be the gold standard for GERD diagnosis according to the Madan study (2005), but its clinical usefulness is limited by invasiveness, cost, and availability.

There is wide acceptance of the use of "alarm symptoms" such as anemia, dysphagia, and unintentional weight loss to determine patients' need for prompt endoscopy. Patients with these symptoms are excluded from trials of endoscopy for GERD or dyspepsia, on the grounds that they represent a population with a higher-than-normal risk of malignancy. Clinical guidelines invoke these alarm features as indications to bypass empiric treatment or non-invasive testing and move straight to endoscopy. One good quality meta-analysis (Vakil 2006) and one fair-quality prospective case series (Rossi 2002) both agreed that alarm symptoms, as well as clnical opinion, are poor predictors of gastrointestinal malignancy. However, at this time there is no compelling evidence as to what should replace them. Vakil and colleagues (2006) do point out the very low incidence of GI malignancy in Western populations below the age of 55, and note that an age cutoff may be appropriate in formulating a strategy for use of endoscopy.

One meta-analysis that included prespecified subgroup analyses did show that there was a small but statistically significant effect in favor of endscopy for patients aged 50 years and older. Other subgroup analyses based on gender, predominant symptom, and presence of *H. pylori* showed no difference in the effectiveness of endoscopy between groups. A poor quality retrospective cohort study failed to demonstrate any significant associations between meaningful endoscopic findings and patient demographics (e.g., age, race, or gender) or NSAID use.

Patients with findings of malignancy or other serious pathology on endoscopy will be followed up appropriately. But for those whose endoscopic diagnosis was nothing more serious than esophagitis and/or peptic ulcer disease, is there an indication to perform a follow-up endoscopy? One good quality prospective cohort study (Westbrook 2005) followed patients who had presented initially with dyspepsia for eight to nine years after their index endoscopy. More than half of patients had persistent symptoms, and those who had undergone repeat endoscopy (31%) were neither more nor less likely to be symptomatic than those who had not. The study did not, however, assess the findings of these subsequent endoscopies.

There is very little recent data on the harms of upper endoscopy when performed for dyspepsia and/or GERD. The author of one economic evaluation noted that complications are commonly cardiorespiratory (related to sedation), and for purposes of the model used an incidence of severe harms of 0.02%. We found no studies reporting harms associated with empiric acid-suppressing medication or *H. pylori* test-and-treat.

There have been several studies of varying quality that have attempted to determine the most cost-effective means of managing the uninvestigated patient with dyspepsia. Five good quality economic evaluations, along with one of fair quality and one poor quality study, have identified an *H. pylori* test-and-treat strategy as the most cost-effective option. The one exception is a US study that looked at a hypothetical population of 30 year olds and preferred empiric PPI for this younger age group. Two poor quality RCTs also recommended empiric

PPI as a more cost-effective choice than endoscopy. There were no studies that demonstrated prompt endoscopy to be the most cost-effective option.

Guidelines

Four guidelines (one good, two fair, and one poor quality) discuss the role endoscopy in the diagnosis and early management of dyspepsia and GERD. One guideline (AGA 2008) recommends endoscopy to evaluate patients who have not responded to PPI therapy and have suspected GERD symptoms. A fair quality guideline (ASGE 2007a) recommends the use of endoscopy for the screening of Barrett's esophagus as clinical indicated, in patients with recurrent symptoms after endoscopic or surgical antireflux procedures, and/or patients with suspected extra-esophageal manifestations of GERD. One poor quality guideline (ASGE 2006) recommends endoscopy only be conducted in an elderly population when the results will influence clinical management or outcomes, that endoscopy preparation does not differ for geriatric populations, and that intensified monitoring may be appropriate for many elderly patients. The AGA (2008) recommends against routine endoscopy for patient with GERD for assessment of disease progression, and finds insufficient evidence for routine upper endoscopy to reduce mortality from esophageal cancer.

One fair quality guideline (ASGE 2007b) specifically recommends endoscopy in patients between the age 45 to 55 years who have new onset dyspepsia and those who have alarm features should undergo an endoscopy, or for patients without alarm features for whom there is clinical suspicion of malignancy. The ASGE (2007b) guideline recommends either endoscopy or a short trial of PPI acid suppression for patients who are younger than 50 years old and are *H. pylori* negative.

Policies

This review identified two payers, Medicare and Aetna, with policies addressing coverage of upper endoscopy for patients with symptoms of GERD. Medicare has issued a general NCD for "endoscopy" allowing coverage of "endoscopic procedures when reasonable and necessary for the individual patient" (CMS 2012). There are no LCDs applicable to Washington or the Northwest Region that further define criteria constituting "reasonable and necessary" use of the procedure. Among private payers, Aetna has issued a policy setting forth detailed clinical indications for the use of upper endoscopy in the following categories: high risk screening, diagnostic, therapeutic, and sequential or periodic surveillance. The policy excludes coverage of upper endoscopy as experimental and investigational in several explicit circumstances.

Discussion and Limitations of the Evidence

Upper endoscopy for diagnosis of GERD and other upper gastrointestinal symptoms is a thorny topic, subject to many sources of imprecision and potential bias. First, there is the problem of defining which symptoms are indicative of gastro-esophageal reflux disease, and which are dyspepsia. In a primary care office setting, patients are rarely clear-cut members of one category or the other. Second, there is the question of practice setting. Some studies look only at patients in primary care, while others include patients in a specialty referral setting such as an endoscopy center. Depending upon the health care system, patients may or may not be able to self-refer into these specialty centers. Therefore it becomes unclear whether patients in a primary care setting and those in a specialty center are in fact comparable populations.

There is not a consensus on how outcomes should be measured in patients who are treated for dyspepsia or GERD. Several symptom scoring tools exist, some of which are validated. When data are pooled into meta-analyses, these symptom scores are necessarily dichotomized into “cured” versus “not cured,” or “improved” versus “not improved.” A cost-utility analysis that converts these symptom scores into QALYs is one further step removed from the actual patient experience.

Economic modeling studies and cost-effectiveness analyses in this report came to a consensus around one type of intervention as being generally the most cost-effective (test-and-treat), and initial endoscopy as being less cost-effective. Using incremental cost-effectiveness ratios (ICERs) allows for some degree of comparison across multiple nations whose health care costs may be defined in radically different ways.

Background

Gastroesophageal reflux disease

Gastroesophageal reflux disease (GERD) is the most common outpatient gastrointestinal diagnosis in the United States, with a prevalence of 10% to 58.3% and an annual incidence of 0.38% to 0.45% (Lacy 2010; Sobieraj 2011). Over 60 million Americans experience GERD-related heart burn once a month and over 25 million experience GERD-related heartburn on a daily basis (University of Michigan Health Systems (UMHS) 2007). The Montreal consensus panel, an international Consensus Group tasked with developing a global definition and classification of GERD, reached strong consensus in defining GERD as "a condition which develops when the reflux of stomach contents causes troublesome symptoms and/or complications" (Vakil 2006, p. 1903). Under this definition, symptoms, as determined by the patient in clinical practice, are considered troublesome when they adversely affect an individual's well-being; reflux symptoms that are not troublesome by the patient should not be diagnosed as GERD (Vakil 2006).

Common symptoms of GERD include heartburn (defined as a burning sensation behind the breastbone), regurgitation and chest pain (Vakil 2006). Physiologic causes of GERD include an increased number of transient lower esophageal sphincter relaxations, ineffective esophageal motility, and reduced lower esophageal sphincter tone (Lacy 2010). Obesity; the presence of a hiatal hernia; and the use of estrogen, nitrates, anticholinergics, and tobacco products are considered risk factors for GERD (Lacy 2010). Gastroesophageal reflux disease can lead to a decreased quality of life and to more severe conditions such as esophagitis, Barrett's esophagus, and adenocarcinoma of the esophagus (UMHS 2007).

Dyspepsia

Dyspepsia is estimated to range in prevalence in the United States from 2.9 to 34.4% (Sobieraj 2011). The Rome III Committee defines dyspepsia as having one or more of the following symptoms: epigastric pain or burning; postprandial fullness; and/or early satiety (Tack 2006). Other dyspeptic symptoms may include nausea and vomiting, upper abdominal bloating, heart burn, and regurgitation (Goswami 2012). Dyspepsia symptoms are often distinguished from GERD as not being "troublesome" enough, referring to the Montreal definition of GERD; however, many authors have used the terms interchangeably.

Diagnostic Procedures

The signs and symptoms of GERD, dyspepsia, and other more severe conditions such as Barrett's esophagus, can be very similar, and diagnostic procedures can be used to establish a diagnosis and rule out other possible conditions. Diagnostic procedures for GERD vary according to specificity and sensitivity of testing accuracy. Additionally, some diagnostic procedures may allow for additional testing, such as a biopsy, if warranted. This section gives an overview of the different diagnostic procedures possible for patients with symptoms of GERD.

> ***Questionnaires*** – questionnaires have been used to improve the accuracy of diagnosing GERD symptoms. Many of the questionnaires have limited sensitivity and specificity, and tend to lack cross-cultural validity. Currently, there is no "gold standard" questionnaire (Lacy 2010).
>
> ***Empiric Therapeutic Trial*** – proton pump inhibitor (PPI) response is often used by clinicians in detecting the presence or absence of GERD (Lacy 2010). A trial of PPI typically includes twice daily dosing for four weeks (Kahrilas 2008). A daily dose of 40 to 80mg of omeprazole is the most common

PPI regimen used in clinical empiric therapy studies (Lacy 2010). The sensitivity and specificity of this PPI test ranges from 62 to 92% and 36 to 100%, respectively (Lacy 2010).

pH Monitoring – pH monitoring as a diagnostic procedure refers to a broad range of tests that monitor the reflux of acid between the stomach and the esophagus through the peristalsis and contractile pressures in the esophagus (Lacy 2010). This procedure places a thin plastic catheter through the nostril and down the back of the throat, into the esophagus (Lacy 2010). The catheter, a sixteenth of an inch in diameter, has an acid sensor at its tip and is placed directly above the lower esophageal sphincter (Lacy 2010). Several other types of pH monitoring exist including ambulatory pH probes; ambulatory impedance monitoring; and capsule (wireless) pH monitoring (Lacy 2010).

Upper Endoscopy – this diagnostic procedure, also called esophagogastroduodenoscopy (EGD), uses a thin scope with a light and camera at its tip to look inside of the upper digestive tract. Endoscopy tends to have a lower sensitivity and specificity than pH monitoring, although has a high specificity (95%) for diagnosing Barrett's esophagus (Lacy 2010). During the endoscopic procedure, tissue samples of the digestive tract can be obtained through a biopsy (Lacy 2010). The use of newer types of endoscopy for diagnosing GERD, such as narrow band imaging, chromoendoscopy, confocal endomicroscopy, capsule endoscopy, and ultra-thin, unsedated transnasal endoscopy care are considered controversial due to the lack of comparison with other validated tests (Lacy 2010).

Double Contrast Barium Swallow – this diagnostic procedures scans for signs of reflux during the examination and looks for morphologic evidence of reflux esophagitis (Lacy 2010). Double-contrast barium swallow is not considered a primary diagnostic procedure for GERD although it may be useful to define the anatomy of the esophagus or to identify complications of gastroesophageal reflux (Lacy 2010).

Washington State Agency Utilization Data

Upper Endoscopies (UE) were captured for all outpatient and Ambulatory Surgery Centers (ASCs) using the CPT codes 43200-43259. Only charges directly related by code were captured. For context, selected cases were reviewed: an average primary payer cost for just the upper endoscopy codes was $1268, with all "day of procedure" charges totaling $1521. From this, it appears that our conservative data extraction method underestimates the UE charges by about 20%. When all data for "day of procedure" was evaluated, about 25% of charges related to additional procedures (colonoscopies, mammograms, etc).

Identification of UE for Gastroesophageal Reflux Disease (GERD)**:** diagnosis codes potentially related to GERD and GI symptoms were reviewed by the Washington State Agency Medical Directors, and a set of codes was agreed upon. The GERD/GI symptom diagnosis codes were further divided into two groups, one for more objective diagnoses, and the other for more general symptoms. These codes and categorizations are listed at the end of the State Agency data section.

Figure 1a: PEB Upper Endoscopies compared to Total population

	2007	2008	2009	2010
PEB Total Population	**172,009**	**204,804**	**210,501**	**213,487**
% of Total Population with a GERD Dx	14.0%	13.9%	14.0%	13.6%
% of Total Population having UE	2.7%	2.7%	2.9%	2.8%
% of Total Pop. having UE for GERD	1.5%	1.5%	1.5%	1.4%

Figure 1b: PEB GERD Endoscopy Patient Counts compared to All Endoscopy Counts

PEB Patient counts	2007	2008	2009	2010	4 year overall*
All patients w GERD	24035	28529	29546	29050	76900
All GERD Dx Upper Endoscopies	2531	2997	3196	3077	11801
% of all GERD patients receiving UE	10.5%	10.5%	10.8%	10.6%	15.3%

*4 year overall patient counts show unique patients over 4 years, and therefore are not the total of annual counts

Figure 1c: Medicaid Upper Endoscopies compared to Total population

	2007	2008	2009	2010
Medicaid Total FFS Population	**378,915**	**392,808**	**416,871**	**424,230**
% of Total Population with a GERD Dx	15.1%	15.1%	15.3%	15.1%
% of Total Population having UE	2.1%	2.0%	2.3%	2.7%
% of Total Pop. having UE for GERD	1.1%	1.1%	1.2%	1.4%

Figure 1d: Medicaid GERD Endoscopy Patient Counts compared to All Upper Endoscopy Counts

Medicaid Patient counts	2007	2008	2009	2010	4 year overall
All patients w GERD	57332	59268	63851	63994	175561
All GERD Dx Upper Endoscopies	4093	4199	5016	6031	19339
% of all GERD patients receiving UE	7.1%	7.1%	7.9%	9.4%	11.0%

*4 year overall patient counts show unique patients over 4 years, and therefore are not the total of annual counts

Figure 1e: L&I GERD Endoscopy Patient Counts compared to All Upper Endoscopy Counts

L&I Patient Counts	2007	2008	2009	2010	4 year overall*
All patients w GERD	1234	1163	1099	1039	4220
% of GERD Diagnosis Claimants having UE	7.05%	7.48%	8.37%	6.83%	32.44%
All GERD Dx Upper Endoscopies	46	46	51	32	175
% of all GERD patients receiving UE	3.73%	3.96%	4.64%	3.08%	4.15%

*4 year overall patient counts show unique patients over 4 years, and therefore are not the total of annual counts

Figure 2: All Agency Summary: Upper Endoscopy with GERD/Upper GI Symptoms

PEB Upper Endoscopies with GERD Diagnoses	2007	2008	2009	2010	4 year overall*
Total Payments	**$1,576,355**	**$2,058,633**	**$2,363,81_**	**$2,277,442**	**$8,276,245**
Patient Count	2578	3087	3366	3335	
Max per procedure	$4,896	$4,677	$4,964	$6,030	$6,030
Average per procedure†	$611	$667	$702	$683	$669
Average per procedure (primary payer only)‡	$872	$912	$978	$953	$933
Minimum per procedure (primary payer only)	$18	$23	$29	$4	$4
Median payment	$631	$723	$748	$661	$711
Standard Deviation	$482	$546	$592	$601	$563
Medicaid Upper Endoscopies with GERD Diagnoses	**2007**	**2008**	**2009**	**2010**	**4 year overall***
Total Payments	**$1,215,982**	**$1,297,634**	**$1,640,671**	**$1,772,311**	**$5,926,598**
Patient Count	4093	4199	5016	6031	19339
Max per procedure	$3,221	$4,896	$3,469	$3,604	$4,896
Average per procedure‡	$297	$309	$327	$294	$306
Minimum per procedure	$0	$0	$0	$0	$0
Median payment	$276	$286	$300	$220	$276
Standard Deviation	$267	$276	$292	$303	$287
L&I Upper Endoscopies with GERD Diagnoses	**2007**	**2008**	**2009**	**2010**	**4 year overall***
Total Payments	**$34,577**	**$33,466**	**$36,54_**	**$20,837**	**$125,429**
Patient Count	46	46	51	32	175
Max per procedure	$3,407	$1,606	$3,139	$1,679	$3,407
Average per procedure‡	$752	$728	$717	$651	$717
Minimum per procedure	$37	$39	$114	$236	$37
Median payment	$799	$855	$813	$511	$813
Standard Deviation	$591	$365	$506	$409	$479

*Four year patient counts are unique patients over the period and are therefore lower than the sum of annual patient counts

†Includes procedures where PEB was the secondary payer

‡Based on UE CPT code charges only, so approximately 20% lower than actual average payment per procedure

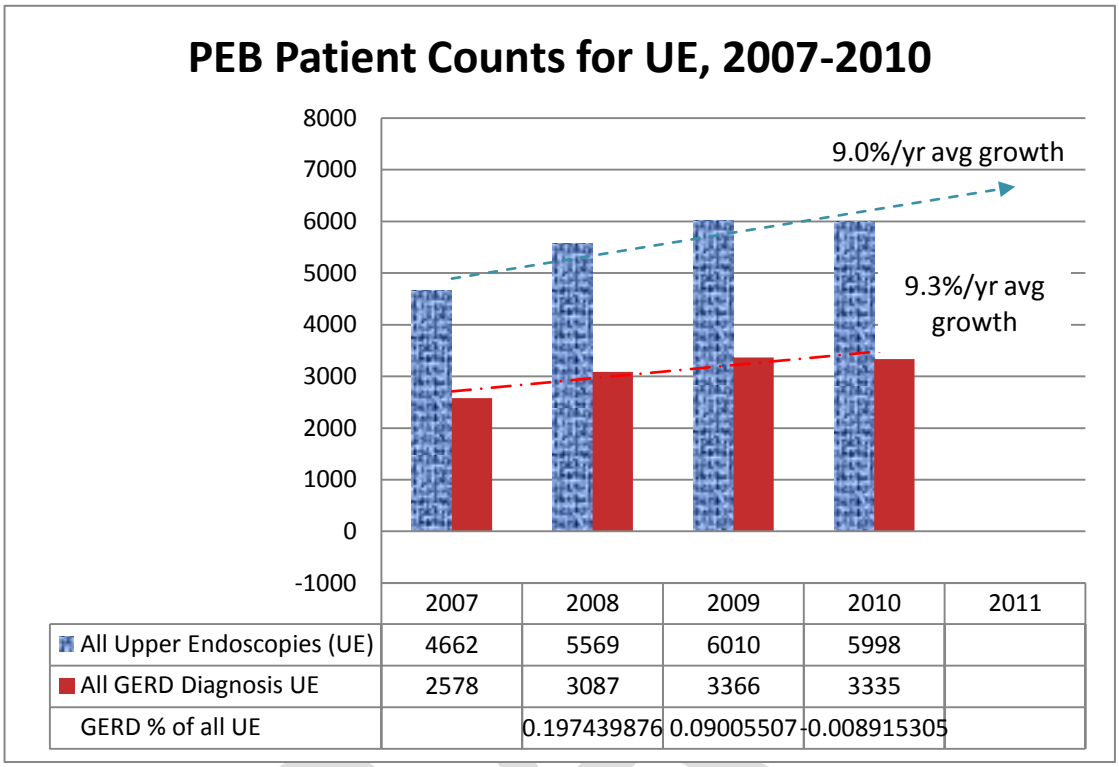
Figure 3a: PEB Payments and Patient Counts by Age and Gender

	Payments by Age and Gender					Patient Counts by Age and Gender				
Age	**2007**	**2008**	**2009**	**2010**	**Grand Total**	**2007**	**2008**	**2009**	**2010**	**4 year overall***
0-17	$36,575	$58,964	$69,086	$97,838	$262,463	46	62	60	81	241
18-34	$135,941	$181,758	$221,201	$202,233	$741,132	149	184	209	204	715
35-49	$364,960	$470,361	$520,055	$488,514	$1,843,890	393	509	503	503	1776
50-64	$849,704	$1,090,858	$1,252,106	$1,162,832	$4,355,501	971	1186	1298	1210	4212
65-79	$166,438	$229,230	$270,091	$296,909	$962,668	706	802	921	970	2947
80+	$22,686	$27,272	$30,823	$28,963	$109,744	145	171	166	174	557
Total	**$1,576,305**	**$2,058,442**	**$2,363,363**	**$2,277,288**	**$8,275,398**	**2410**	**2914**	**3157**	**3142**	**10448**
% Female	**2007**	**2008**	**2009**	**2010**	**Grand Total**	**2007**	**2008**	**2009**	**2010**	**4 year overall***
0-17	59.6%	62.0%	52.3%	51.8%	55.3%	54.3%	59.7%	53.3%	59.3%	58.1%
18-34	62.5%	70.8%	61.5%	60.4%	63.6%	62.4%	67.9%	61.7%	60.8%	63.8%
35-49	63.6%	62.8%	63.3%	62.4%	63.0%	63.1%	62.5%	63.0%	64.2%	63.1%
50-64	60.6%	59.3%	61.1%	61.0%	60.5%	61.2%	60.0%	61.0%	61.2%	61.1%
65-79	46.3%	49.1%	45.2%	47.3%	47.0%	53.4%	58.2%	53.1%	56.3%	55.7%
80+	41.5%	51.1%	41.2%	57.0%	47.9%	44.8%	50.3%	50.6%	52.9%	51.0%
Total	**59.7%**	**60.0%**	**59.3%**	**59.0%**	**59.4%**	**58.2%**	**59.9%**	**58.4%**	**59.6%**	**59.5%**

Figure 3b: Medicaid Payments and Patient Counts by Age and Gender

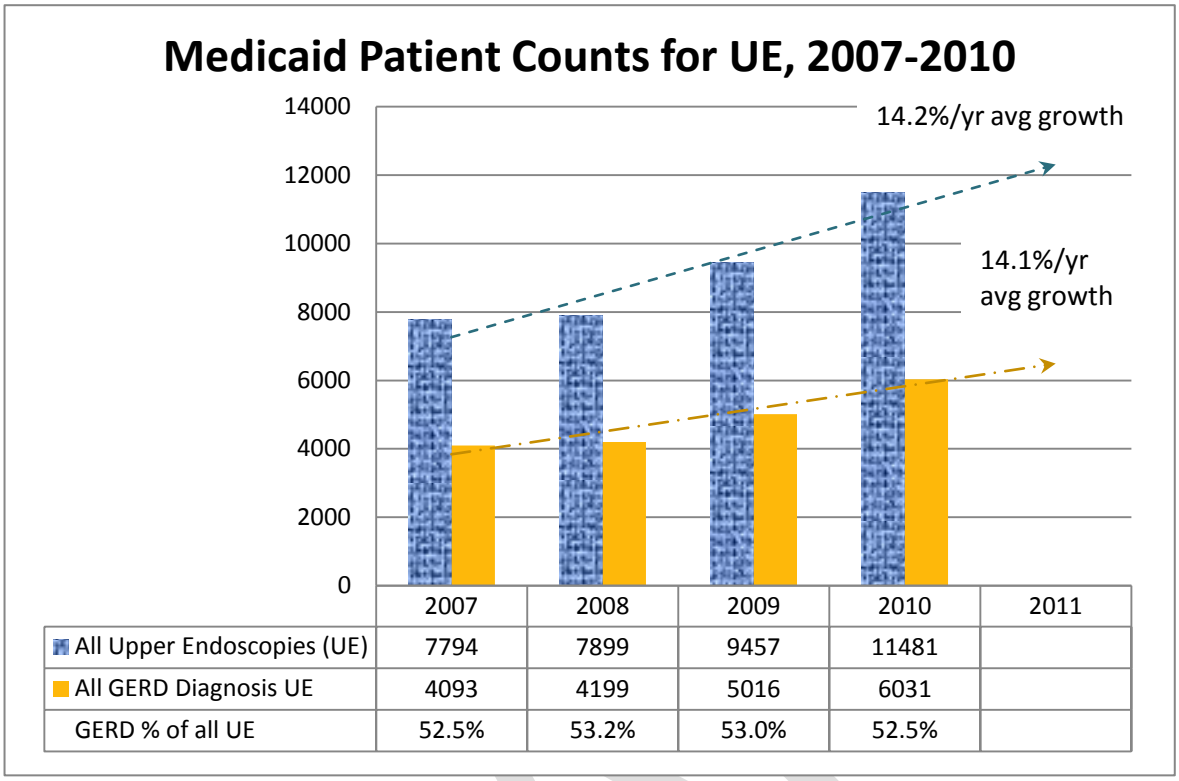
	Payments by Age and Gender					Patient Counts by Age and Gender				
Age	**2007**	**2008**	**2009**	**2010**	**Grand Total**	**2007**	**2008**	**2009**	**2010**	**4 year overall***
0-17	$54,432	$58,818	$95,343	$101,793	$310,387	155	167	238	259	819
18-34	$149,952	$202,667	$229,545	$260,202	$842,366	451	554	607	707	2319
35-49	$397,924	$410,614	$544,541	$549,633	$1,902,713	1225	1211	1474	1614	5524
50-64	$537,683	$540,828	$706,873	$802,164	$2,587,549	1668	1700	2045	2542	7955
65-79	$68,744	$67,058	$55,455	$48,267	$239,524	492	434	531	749	2206
80+	$7,246	$17,650	$8,913	$9,857	$43,665	102	133	121	171	527
Total	$1,215,982	$1,297,634	$1,640,671	$1,771,916	$5,926,203	4093	4199	5016	6042	19350
% Female	**2007**	**2008**	**2009**	**2010**	**Grand Total**	**2007**	**2008**	**2009**	**2010**	**4 year overall***
0-17	59.6%	62.0%	52.3%	51.8%	55.3%	54.3%	59.7%	53.3%	59.3%	58.1%
18-34	62.5%	70.8%	61.5%	60.4%	63.6%	62.4%	67.9%	61.7%	60.8%	63.8%
35-49	63.6%	62.8%	63.3%	62.4%	63.0%	63.1%	62.5%	63.0%	64.2%	63.1%
50-64	60.6%	59.3%	61.1%	61.0%	60.5%	61.2%	60.0%	61.0%	61.2%	61.1%
65-79	46.3%	49.1%	45.2%	47.3%	47.0%	53.4%	58.2%	53.1%	56.3%	55.7%
80+	41.5%	51.1%	41.2%	57.0%	47.9%	44.8%	50.3%	50.6%	52.9%	51.0%
Total	**59.7%**	**60.0%**	**59.3%**	**59.0%**	**59.4%**	**58.2%**	**59.9%**	**58.4%**	**59.6%**	**59.5%**

Figure 4a: PEB Patient Counts, All Upper Endoscopy vs GERD Diagnosis UE, 2007-2010



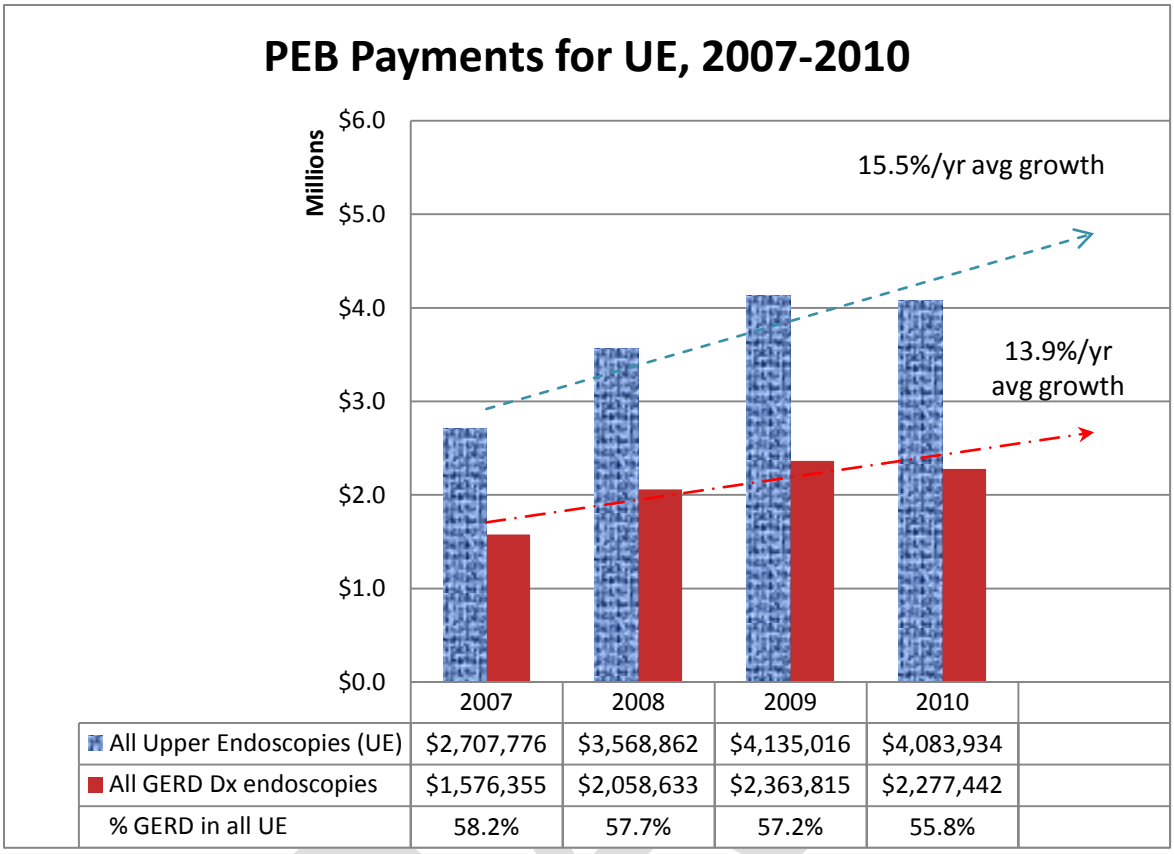
	2007	2008	2009	2010	2011
All Upper Endoscopies (UE)	4662	5569	6010	5998	
All GERD Diagnosis UE	2578	3087	3366	3335	
GERD % of all UE		0.197439876	0.09005507	-0.008915305	

Figure 4b: Medicaid Patient Counts, All Upper Endoscopy vs GERD Diagnosis UE, 2007-2010



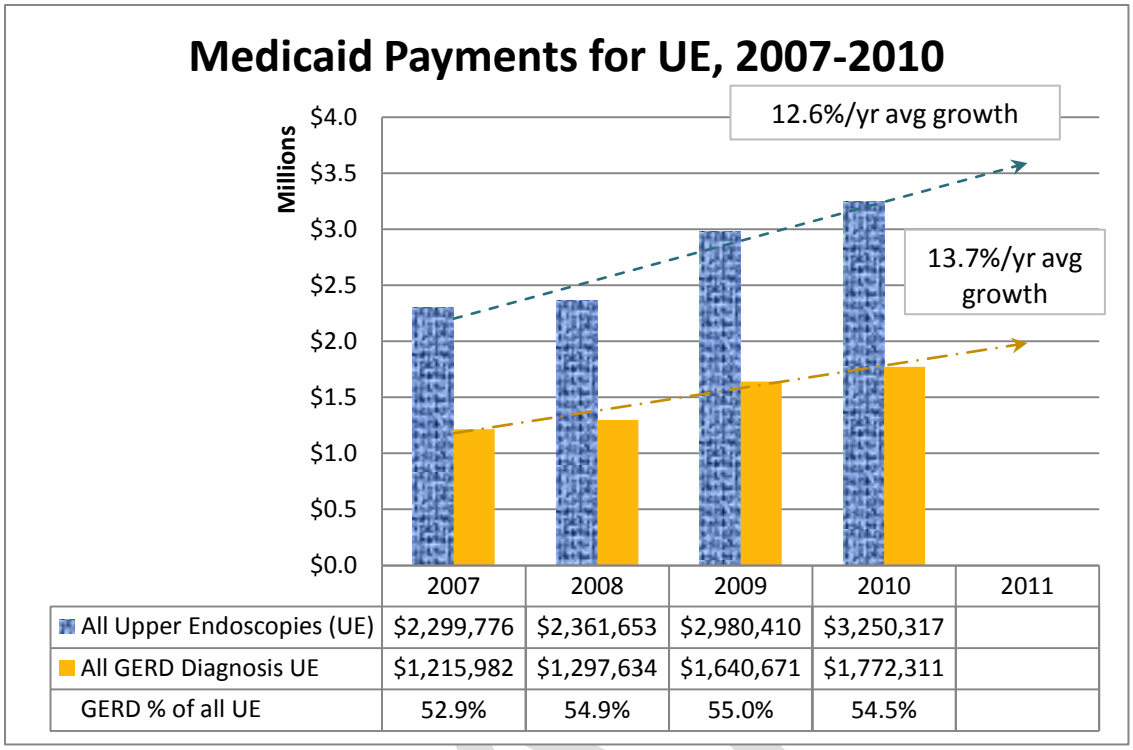
	2007	2008	2009	2010	2011
All Upper Endoscopies (UE)	7794	7899	9457	11481	
All GERD Diagnosis UE	4093	4199	5016	6031	
GERD % of all UE	52.5%	53.2%	53.0%	52.5%	

Figure 5a: PEB Payments for All Upper Endoscopy vs GERD Diagnosis UE, 2007-2010



	2007	2008	2009	2010
All Upper Endoscopies (UE)	$2,707,776	$3,568,862	$4,135,016	$4,083,934
All GERD Dx endoscopies	$1,576,355	$2,058,633	$2,363,815	$2,277,442
% GERD in all UE	58.2%	57.7%	57.2%	55.8%

Figure 5b: Medicaid Payments for All Upper Endoscopy vs GERD Diagnosis UE, 2007-2010



	2007	2008	2009	2010	2011
All Upper Endoscopies (UE)	$2,299,776	$2,361,653	$2,980,410	$3,250,317	
All GERD Diagnosis UE	$1,215,982	$1,297,634	$1,640,671	$1,772,311	
GERD % of all UE	52.9%	54.9%	55.0%	54.5%	

Figure 6a: PEB Top 10 Diagnosis codes for GERD UEs, Descending by 4 year overall payments

PEB GERD Diagnoses	Diag Code	2007	2008	2009	2010	Grand Total	% Total
ESOPHAGEAL REFLUX	530.81	$248,766	$387,451	$448,739	$350,709	**$1,435,666**	**17.3%**
BARRETT'S ESOPHAGUS	530.85	$192,269	$224,967	$279,074	$284,288	**$980,598**	**11.8%**
DYSPHAGIA NOS	787.20	$41,876	$180,474	$253,757	$323,591	**$799,698**	**9.7%**
STOMACH FUNCTION DIS NEC	536.8	$157,345	$195,668	$215,724	$190,094	**$758,831**	**9.2%**
REFLUX ESOPHAGITIS	530.11	$117,279	$158,795	$197,673	$162,435	**$636,182**	**7.7%**
ESOPHAGEAL STRICTURE	530.3	$122,047	$157,034	$177,774	$157,093	**$613,948**	**7.4%**
GSTR/DDNTS NOS W/O HMRHG	535.50	$122,096	$140,961	$128,968	$147,132	**$539,157**	**6.5%**
ABDMNAL PAIN EPIGASTRIC	789.06	$91,566	$135,111	$141,850	$146,014	**$514,540**	**6.2%**
OTH SPF GSTRT W/O HMRHG	535.40	$75,011	$90,246	$91,263	$83,551	**$340,071**	**4.1%**
ESOPHAGITIS, UNSPECIFIED	530.10	$45,576	$56,474	$79,365	$73,479	**$254,894**	**3.1%**

Figure 6b: Medicaid Top 10 Diagnosis codes for GERD UEs, Descending by 4 year overall payments

Medicaid GERD Diagnoses	Diag Code	2007	2008	2009	2010	Grand Total	% Total
ESOPHAGEAL REFLUX	530.81	$159,156	$156,727	$219,874	$230,105	**$765,862**	**12.9%**
DYSPHAGIA NOS	787.2	$43,406	$154,363	$209,826	$209,679	**$617,274**	**10.4%**
REFLUX ESOPHAGITIS	530.11	$103,112	$105,167	$157,656	$171,217	**$537,152**	**9.1%**
STRICTURE AND STENOSIS OF ESOPHAGUS	530.3	$100,167	$99,616	$146,421	$165,560	**$511,765**	**8.6%**
ABDMNAL PAIN EPIGASTRIC	789.06	$98,018	$120,847	$131,383	$139,204	**$489,452**	**8.3%**
UNSPECIFIED GASTRITIS AND GASTRODUODENITIS	535.5	$93,573	$99,149	$113,033	$136,981	**$442,737**	**7.5%**
BARRETT'S ESOPHAGUS	530.85	$67,263	$81,999	$89,444	$123,967	**$362,673**	**6.1%**
DYSPEPSIA AND OTHER SPECIFIED DISORDERS OF FUNCTION OF STOMACH	536.8	$79,992	$78,099	$108,509	$92,375	**$358,975**	**6.1%**
OTHER SPECIFIED GASTRITIS	535.4	$73,458	$89,584	$78,411	$98,227	**$339,680**	**5.7%**
ESOPHAGEAL REFLUX	530.1	$33,176	$44,115	$73,905	$79,769	**$230,964**	**3.9%**

Figure 7a: All PEB GERD DX Upper Endoscopies, General Symptoms vs Objective Diagnoses, Highest to Lowest Total Payments 2007-2010

All PEB GERD Dx UE, Diagnosis Category	2007	2008	2009	2010	Grand Total	% of Cate-gory Total
General Symptoms Top Diagnoses	**$770,611**	**$972,457**	**$1,084,923**	**$1,159,927**	**$3,987,919**	
DYSPHAGIA NOS	$41,876	$180,474	$253,757	$323,591	$799,698	20.1%
STOMACH FUNCTION DIS NEC	$157,345	$195,668	$215,724	$190,094	$758,831	19.0%
GSTR/DDNTS NOS W/O HMRHG	$122,096	$140,961	$128,968	$147,132	$539,157	13.5%
ABDMNAL PAIN EPIGASTRIC	$91,566	$135,111	$141,850	$146,014	$514,540	12.9%
OTH SPF GSTRT W/O HMRHG	$75,011	$90,246	$91,263	$83,551	$340,071	8.5%
HEARTBURN	$39,776	$47,225	$56,684	$56,694	$200,379	5.0%
ABDMNAL PAIN UNSPCF SITE	$22,771	$39,322	$49,609	$51,567	$163,270	4.1%
DEL - DYSPHAGIA	$151,753				$151,753	3.8%
DYSPHAGIA NEC	$11,387	$25,404	$31,697	$35,500	$103,987	2.6%
CHEST PAIN NOS	$19,996	$27,768	$34,562	$19,423	$101,750	2.6%
DYSPHAGIA,PHARYNGOESOPH	$5,044	$35,897	$19,369	$13,781	$74,090	1.9%
ABDMNAL PAIN GENERALIZED	$8,229	$8,504	$15,525	$27,353	$59,611	1.5%
ESOPHAGEAL DISORDER NOS	$3,387	$9,380	$21,469	$23,535	$57,770	1.4%
ABDMNAL PAIN OTH SPCF ST	$6,501	$10,744	$5,796	$16,045	$39,085	1.0%
OTHER DSRDERS ESOPHAGUS	$8,151	$13,718	$3,674	$9,671	$35,215	0.9%
CHEST PAIN NEC	$2,819	$8,343	$7,573	$8,819	$27,554	0.7%
PERSISTENT VOMITING	$2,657	$841	$4,424	$883	$8,806	0.2%
DYSPHAGIA, ORAL PHASE		$1,303	$245	$3,968	$5,516	0.1%
DYSPHAGIA, OROPHARYNGEAL		$686	$856	$820	$2,362	0.1%
GSTR MCSL HYPRT W/O HMRG		$469	$986	$851	$2,306	0.1%
DYSPHAGIA, PHARYNGEAL		$191	$893		$1,084	0.0%
STOMACH FUNCTION DIS NOS	$246			$636	$882	0.0%
ALCHL GASTRTIS W/O HMRHG		$203	$0		$203	0.0%
Objective Diagnosis	**$805,743**	**$1,086,176**	**$1,278,892**	**$1,117,514**	**$4,288,326**	
ESOPHAGEAL REFLUX	$248,766	$387,451	$448,739	$350,709	$1,435,666	33.5%
BARRETT'S ESOPHAGUS	$192,269	$224,967	$279,074	$284,288	$980,598	22.9%
REFLUX ESOPHAGITIS	$117,279	$158,795	$197,673	$162,435	$636,182	14.8%
ESOPHAGEAL STRICTURE	$122,047	$157,034	$177,774	$157,093	$613,948	14.3%
ESOPHAGITIS, UNSPECIFIED	$45,576	$56,474	$79,365	$73,479	$254,894	5.9%
ACUTE GASTRTIS W/O HMRHG	$44,233	$52,868	$53,420	$54,329	$204,850	4.8%
OTHER ESOPHAGITIS	$19,574	$29,385	$28,447	$22,266	$99,673	2.3%
ULC ESOPHAGUS W/O BLEED	$11,250	$11,915	$11,355	$9,313	$43,833	1.0%
ACUTE ESOPHAGITIS	$3,359	$4,249	$3,028	$3,124	$13,759	0.3%
ULCER ESOPHAGUS W BLEED	$644	$2,202	$16	$478	$3,340	0.1%
DEL - ESOPHAGITIS	$745	$836			$1,582	0.0%

Grand Total	$1,576,355	$2,058,633	$2,363,815	$2,277,442	$8,276,245	

Figure 7b: All Medicaid GERD DX Upper Endoscopies, General Symptoms vs Objective Diagnoses, Highest to Lowest Total Payments 2007-2010

All Medicaid GERD UE Dx, by Diagnosis Category	2007	2008	2009	2010	Grand Total	% of Category Total
General	**$644,969**	**$718,244**	**$851,851**	**$892,558**	**$3,107,622**	
DYSPHAGIA NOS	$43,406	$154,363	$209,826	$209,679	$617,274	19.9%
ABDMNAL PAIN EPIGASTRIC	$98,018	$120,847	$131,383	$139,204	$489,452	15.8%
UNSPECIFIED GASTRITIS	$93,573	$99,149	$113,033	$136,981	$442,737	14.2%
DYSPEPSIA AND OTHER SPECIFIED DISORDERS	$79,992	$78,099	$108,509	$92,375	$358,975	11.6%
OTHER SPECIFIED GASTRITIS	$73,458	$89,584	$78,411	$98,227	$339,680	10.9%
ABDMNAL PAIN UNSPCF SITE	$41,301	$42,737	$49,220	$63,268	$196,526	6.3%
HEARTBURN	$28,742	$30,380	$50,135	$39,365	$148,623	4.8%
DYSPHAGIA NOS	$141,497		$9		$141,507	4.6%
ABDMNAL PAIN GENERALIZED	$11,839	$10,778	$23,422	$20,983	$67,022	2.2%
ABDMNAL PAIN OTHER, MULTI	$6,469	$14,923	$14,789	$15,490	$51,672	1.7%
DYSPHAGIA NEC	$1,259	$16,990	$11,346	$12,417	$42,012	1.4%
UNSPECIFIED DISORDER OF ESOPHAGUS	$1,845	$4,347	$11,780	$20,348	$38,320	1.2%
DYSPHAGIA,PHARYNGOESOPH	$838	$18,313	$10,953	$8,158	$38,262	1.2%
OTHER ESOPHAGEAL	$6,210	$8,814	$4,651	$12,539	$32,214	1.0%
CHEST PAIN NOS	$6,980	$11,787	$7,725	$4,681	$31,172	1.0%
CHEST PAIN NEC	$3,550	$6,200	$9,334	$7,074	$26,158	0.8%
DYSPHAGIA, OROPHARYNGL	$624	$5,452	$6,632	$4,201	$16,909	0.5%
PERSISTENT VOMITING	$3,972	$1,300	$6,592	$4,725	$16,589	0.5%
UNSPECIFIED FUNCTIONAL DISORDER OF STOMACH	$746	$825	$1,916	$1,786	$5,273	0.2%
DYSPHAGIA, PHARYNGEAL		$999	$1,571	$553	$3,123	0.1%
DYSPHAGIA, ORAL	$470	$877	$612	$160	$2,119	0.1%
ALCOHOLIC GASTRITIS		$1,398		$154	$1,552	0.0%
ALCOHOLIC GASTRITIS, WITHOUT HEMORRHAGE	$181	$81		$189	$451	0.0%
Objective	**$571,013**	**$579,390**	**$788,820**	**$879,753**	**$2,818,976**	
ESOPHAGEAL REFLUX	$159,156	$156,727	$219,874	$230,105	$765,862	27.2%
REFLUX ESOPHAGITIS	$103,112	$105,167	$157,656	$171,217	$537,152	19.1%
STRICTURE/ STENOSIS OF ESOPH	$100,167	$99,616	$146,421	$165,560	$511,765	18.2%
BARRETT'S ESOPHAGUS	$67,263	$81,999	$89,444	$123,967	$362,673	12.9%
ESOPHAGITIS, UNSPECIFIED	$33,176	$44,115	$73,905	$79,769	$230,964	8.2%
ACUTE GASTRITIS	$57,380	$49,897	$45,942	$40,985	$194,204	6.9%
OTHER ESOPHAGITIS	$29,871	$25,855	$32,939	$43,455	$132,120	4.7%
ULCER OF ESOPHAGUS	$14,422	$9,756	$17,180	$17,361	$58,719	2.1%
ACUTE ESOPHAGITIS	$3,535	$5,121	$4,823	$6,109	$19,588	0.7%

ULCER OF ESOPHAGUS W/BLEEDING	$2,930	$1,138	$636	$1,205	$5,909	0.2%
ACUTE GASTRITIS				$21	$21	0.0%
Grand Total	**$1,215,982**	**$1,297,634**	**$1,640,671**	**$1,772,311**	**$5,926,598**	

Figure 8a: PEB Payments for General Symptoms vs Objective Diagnosis, Endoscopies with a GERD Diagnosis 2007-2010

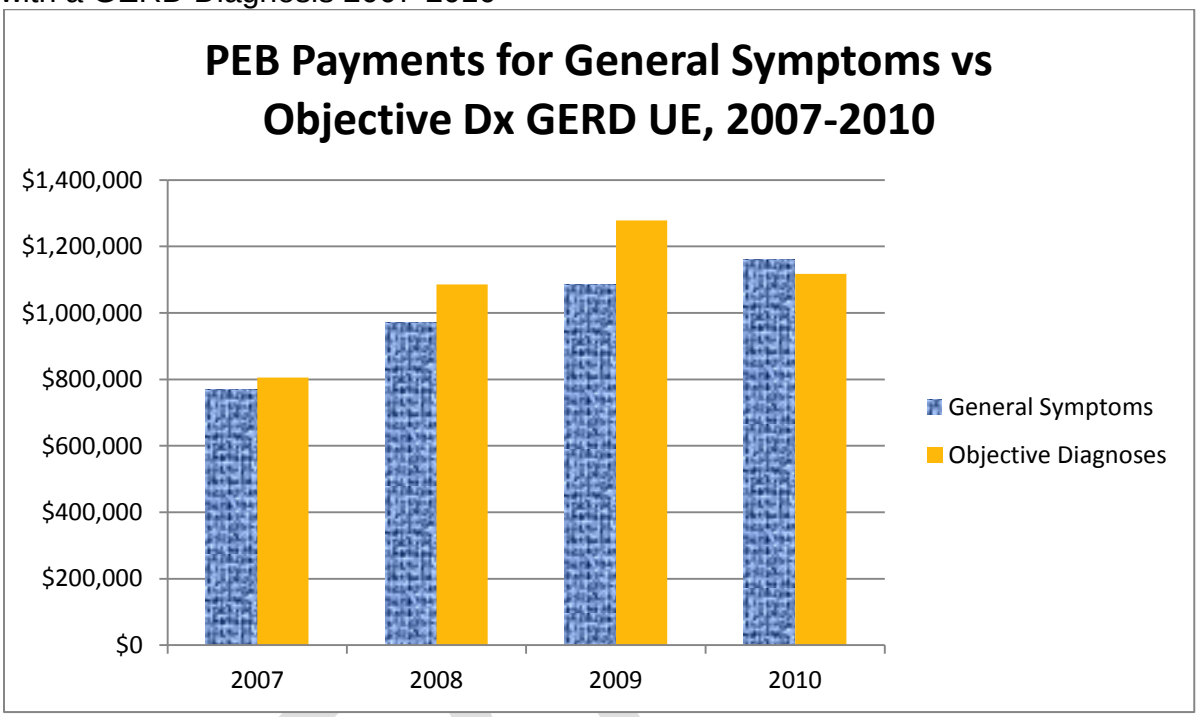


Figure 8b: PEB Patient Counts for General Symptoms vs Objective Diagnosis, Endoscopies with a GERD Diagnosis 2007-2010

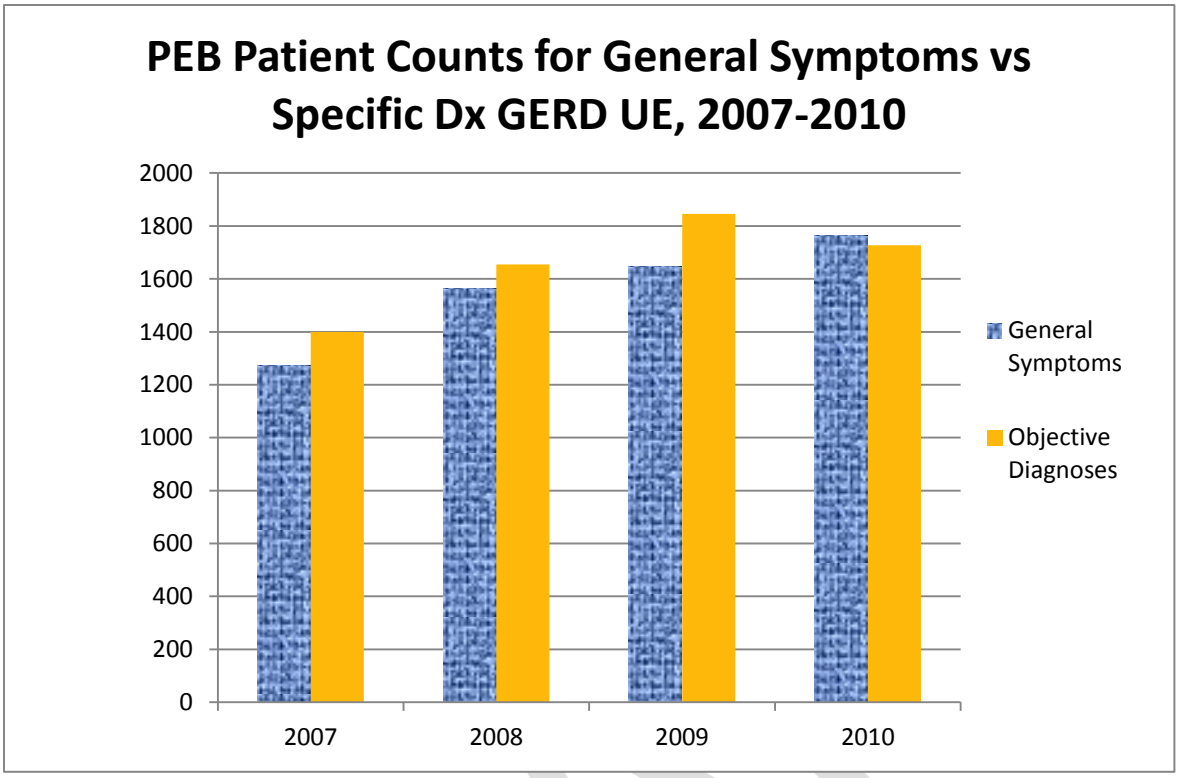


Figure 8c: Medicaid Payments for General Symptoms vs Objective Diagnosis, Endoscopies with a GERD Diagnosis 2007-2010

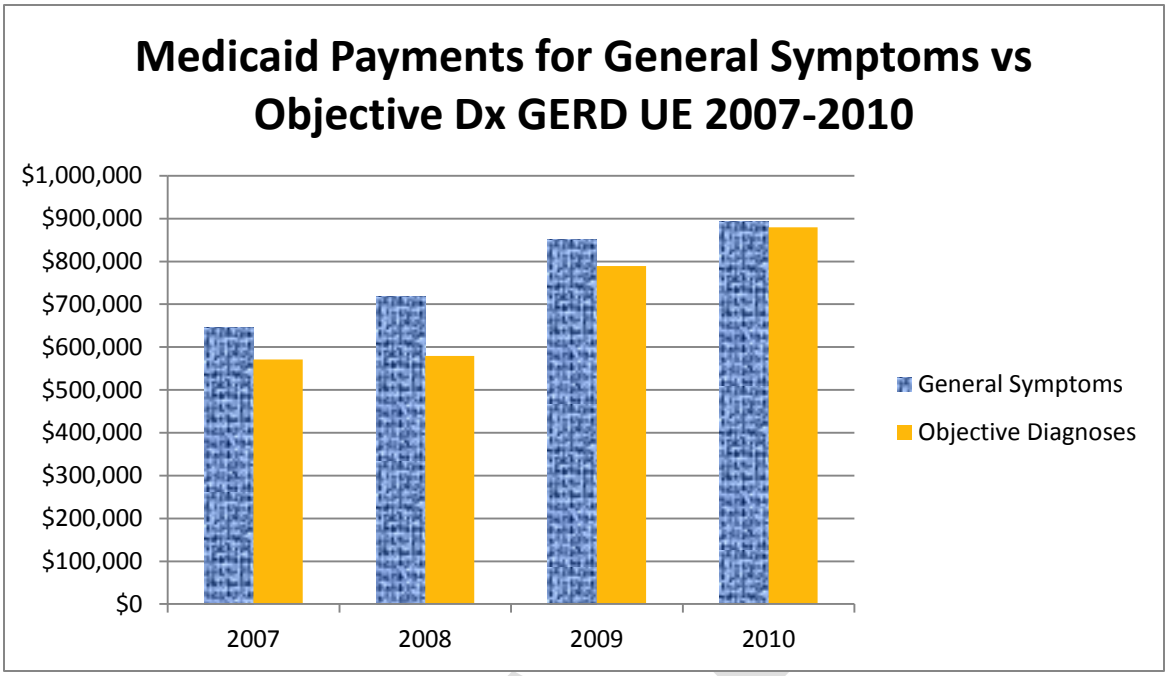


Figure 8d: Medicaid Patient Counts for General Symptoms vs Objective Diagnosis, Endoscopies with a GERD Diagnosis 2007-2010

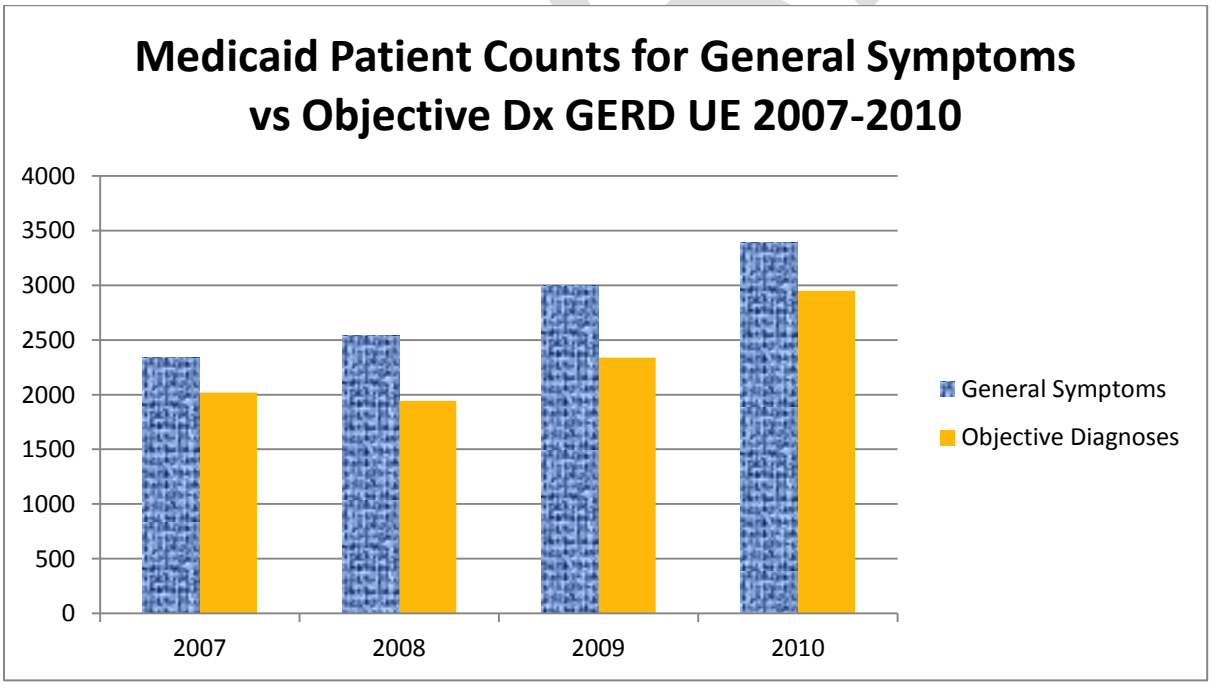


Figure 9a: **Repeated procedures: PEB** GERD Diagnosis Upper Endoscopy

- Maximum UE procedures for one patient = 16
- 1496 (of total 10305) patients had a repeat endoscopy with a GERD Diagnosis in 4 years (14.5%)
- Of those who had repeats, 1156 of 1496 had only one (77%)
- In those patients who had repeated GERD Diagnosis UE, each had an average of 1.73 UE per person
- Repeats averaged 397 days between.

PEB Patients with Repeated Endoscopies with UE Diagnoses

Procedures	Patients
16	1
12	1
10	2
9	1
8	4
7	8
6	9
5	19
4	62
3	231
2	1156

Figure 9b: Repeated procedures: Medicaid GERD Diagnosis Upper Endoscopy

- Maximum UE procedures for one patient = 17
- 538 (of total 19339) patients had a repeat endoscopy with a GERD Diagnosis in 4 years (4.5%)
- Of those who had repeats, 350 of 538 had only one (65%)
- In those patients who had repeated GERD Diagnosis UE, each had an average of 1.9 UE per person
- Repeats averaged 190 days between.

Medicaid Patients with Repeated Endoscopies with UE Diagnoses

Procedures	Patients
17	1
16	1
15	1
14	4
10	8
9	4
8	6
7	13
6	15
5	10
4	42
3	83
2	350

Related Medical Codes		
	Diagnosis Codes likely to indicate GERD	Diagnosis codes Symptom Classification
530.1	Esophagitis	Objective Diagnosis
530.11	Reflux esophagitis	Objective Diagnosis
530.12	Acute esophagitis	Objective Diagnosis
530.19	Other esophagitis	Objective Diagnosis
530.2	Ulcer of esophagus	Objective Diagnosis
530.21	Ulcer of esophagus with bleeding	Objective Diagnosis
530.3	Stricture and stenosis of esophagus	Objective Diagnosis
530.81	Esophageal reflux	Objective Diagnosis
530.85	Barrett's esophagus	Objective Diagnosis
530.89	Other	General Symptoms
530.9	Unspecified disorder of esophagus	General Symptoms
535	Acute gastritis	Objective Diagnosis
535.0	Acute gastritis, without mention of hemorrhage	Objective Diagnosis
535.2	Alcoholic gastritis	General Symptoms
535.3	Alcoholic gastritis, without mention of hemorrhage	General Symptoms
535.4	Other specified gastritis	General Symptoms
535.5	Unspecified gastritis and gastroduodenitis	General Symptoms
536.2	Persistent vomiting	General Symptoms
536.8	Dyspepsia and other specified disorders of function of stomach	General Symptoms
536.9	Unspecified functional disorder of stomach	General Symptoms
786.5	CHEST PAIN NOS	General Symptoms
786.59	CHEST PAIN NEC	General Symptoms
787.1	HEARTBURN	General Symptoms
787.2	DYSPHAGIA NOS	General Symptoms
787.21	DYSPHAGIA, ORAL	General Symptoms
787.22	DYSPHAGIA, OROPHARYNGEAL	General Symptoms
787.23	DYSPHAGIA, PHARYNGEAL	General Symptoms
787.24	DYSPHAGIA,PHARYNGOESOPH	General Symptoms
787.29	DYSPHAGIA NEC	General Symptoms
789	ABDMNAL PAIN UNSPCF SITE	General Symptoms
789.06	ABDMNAL PAIN EPIGASTRIC	General Symptoms
789.07	ABDMNAL PAIN GENERALIZED	General Symptoms
789.09	ABDMNAL PAIN OTHER, MULTI	General Symptoms

Methods

A systematic review using best evidence methodology was used to search and summarize evidence for Key Questions #1 through #5 as outlined below:

- Completed search of the Medicaid Evidence-based Decisions (MED) Project primary evidence sources.
- Existing high quality systematic reviews (SRs) and technology assessments (TAs) summarized for each Key Question.
- If there were two or more comparable SRs or TAs identified and one was more recent, of better quality, or more comprehensive, then the other review(s) were excluded.
- Additional search of the MEDLINE® database completed to identify subsequently published studies. Individual studies published after the search dates of the last high quality review were appraised and synthesized with the results of the high quality SRs and TAs.
- If there were no high quality reviews identified, a search, appraisal, and summary of primary individual studies was completed for the last 10 years (January 2002 to January 2012).

Evidence

Search strategy

For this WA Health Technologoy Assessment (WA HTA) report, a search was conducted to identify published SRs and individual studies (from January 2002 to January 2012) in the MEDLINE® database. The MEDLINE® search strategy is provided in Appendix A. A list of excluded studies with reasons for exclusion is provided in Appendix B. An additional search using the MED Project primary sources was completed to identify SRs and TAs. The primary sources searched included: Cochrane Library (Wiley Interscience), UK National Institute for Health and Clinical Excellence (NICE), Blue Cross/Blue Shield Health Technology Assessment (HTA) program, Veterans Administration TA program, BMJ Clinical Evidence, the Canadian Agency for Drugs and Technologies in Health (CADTH), and the Agency for Health Research and Quality (AHRQ).

Inclusion Criteria

- Articles were included if they were peer reviewed English-language publications.
- Included abstractable information about adults presenting with initial complaints of upper gastrointestinal (GI) discomfort, dyspepsia or GERD.
- Study Design:
    - For Key Questions #1, #3 to #5, SRs, TAs, meta-analyses, randomized controlled trials (RCTs), and controlled clinical trials or comparative observational studies;
    - For Key Question #2, SRs, TAs, meta-analyses, RCTs, cohorts, and case series; and

- For Key Question #6, economic evaluations, cost-effectiveness analyses, and economic simulation models.

Exclusion Criteria

- Long-term treatment for GERD
- Confirmed Barrett's Esophagus diagnosis
- Wireless capsule endoscopy
- Previous GI and anti-reflux surgeries
- Exclusively Asian populations

Quality Assessment - Evidence

The methodological quality of the included studies was assessed using standard instruments developed and adapted by the Center for Evidence-based Policy and the MED Project that are modifications of the systems used by NICE and the Scottish Intercollegiate Guidelines Network (SIGN) (NICE 2009; SIGN 2009). All studies were assessed by two independent and experienced raters. In cases where there was not agreement about the quality of the study or guideline the disagreement was resolved by conference or the use of a third rater. Quality assessment checklists are provided in Appendix G.

The overall strength of evidence was rated using a modified version of the Grading of Recommendations Assessment, Development and Evaluation (GRADE) system (Guyatt 2008). Each study was assigned a rating of good, fair, poor, based on its adherence to recommended methods and potential for biases. In brief, good quality SRs included a clearly focused question, a literature search that was sufficiently rigorous to identify all relevant studies, criteria used to select studies for inclusion (e.g., RCTs) and assess study quality, and assessments of heterogeneity to determine if a meta-analysis would be appropriate. Good quality RCTs clearly described the population, setting, intervention and comparison groups; randomly allocated patients to study groups; concealed allocation; had low dropout rates; and reported intention-to-treat analyses. Good quality SRs and RCTs also had low potential for bias from conflicts of interest and funding source. Fair quality SRs and RCTs had incomplete information about methods that might mask important limitations. Poor quality SRs and RCTs had clear flaws that could introduce significant bias.

A summary judgment for the overall quality of evidence was assigned to each Key Question and outcome (Guyatt 2008). The GRADE system defines the quality of a body of evidence for an outcome in the following manner:

- High: Further research is *very unlikely* to change our confidence in the estimate of effect. Typical sets of studies would be large RCTs without serious limitations.
- Moderate: Further research is *likely* to have an important impact on our confidence in the estimate of effect and may change the estimate. Typical sets of studies would be

RCTs with some limitations or well-performed observational studies with additional strengths that guard against potential bias and have large estimates of effects.

- Low[1]: Further research is *very likely* to have an important impact on our confidence in the estimate of effect and is likely to change the estimate. Typical sets of studies would be RCTs with very serious limitations or observational studies without special strengths.

Quality Assessment – Economic studies

The methodological quality of the studies was assessed using a standard instrument developed and adapted by the Center for Evidence-based Policy and the MED Project that is based on modifications of the BMJ (Drummond 1996), the Consensus on Health Economic Criteria list (Evers 2005), and the NICE economic evaluation checklist (NICE 2009). In brief, good quality economic evaluations include a well described research question with economic importance and detailed methods to estimate the effectiveness and costs of the intervention. A sensitivity analysis is provided for all important variables and the choice and values of variables are justified. Good quality economic evaluations also have low potential for bias from conflicts of interest and funding sources. Fair quality economic evaluations have incomplete information about methods to estimate the effectiveness and costs of the intervention. The sensitivity analysis may not consider one or more important variables, and the choice and values of variables are not completely justified. All of these factors might mask important study limitations. Poor quality economic evaluations have clear flaws that could introduce significant bias. These could include significant conflict of interest, lack of sensitivity analysis, or lack of justification for choice of values and variables. All studies were assessed by two independent and experienced raters. In cases where there was not agreement about the quality of the study the disagreement was resolved by conference or the use of a third rater. The economic evaluation checklist is provided in Appendix G.

Guidelines

Search Strategy

A search for relevant clinical practice guidelines (CPGs) was conducted, using the following sources: the National Guidelines Clearinghouse database, the Institute for Clinical Systems Improvement (ICSI), SIGN, NICE, the Veterans Administration/Department of Defense (VA/DOD) guidelines, US Preventive Services Task Force (USPSTF), Australian National Health and Medical Research Council, New Zealand Guidelines Group, and the Center for Disease Control and Prevention (CDC). Included guidelines were limited to those published after 2006.

Quality Assessment

The methodological quality of the guidelines was assessed using an instrument (Appendix G) adapted from the Appraisal of Guidelines Research and Evaluation (AGREE) Collaboration (AGREE Next Steps Consortium 2009). The guidelines were rated by two individuals. A third

[1] The MED Project collapses the low and very low GRADE categories because they usually have the same policy implications.

rater was used to obtain consensus if there were disagreements. Each guideline was assigned a rating of good, fair, poor based on its adherence to recommended methods and potential for biases. A guideline rated as good quality fulfilled all or most of the criteria. A fair quality guideline fulfilled some of the criteria and those criteria not fulfilled were thought unlikely to alter the recommendations. If no or few of the criteria were met, the guideline was rated as poor quality.

Policies

At the direction of the WA HTA program, select payer policies were searched and summarized. Aetna, Regence Blue Cross Blue Shield, GroupHealth, and Medicare National and Local Coverage Determinations (NCD and LCD, respectively), were searched using the payers' respective websites.

Findings

The MED Project primary sources identified two SRs and TAs and nine economic studies. For the Key Questions, the MEDLINE® search retrieved 1,316 citations, of which one review and seven articles representing seven studies were included.

KQ1. What is the evidence of effectiveness for early treatment strategies that include upper endoscopy compared with empiric medical management?

One good quality systematic review (Delaney 2005) and one fair quality prospective cohort study (Madan 2005) were identified for this Key Question.

Systematic reviews and technology assessments

One good quality systematic review (Delaney 2005) was identified in the search of core sources. Delaney and colleagues (2005) completed a Cochrane analysis of management strategies, including initial investigation and empirical treatments, for people with dyspepsia. Participants were patients presenting either to primary care or to an endoscopy unit, without prior endoscopic findings. The authors use a broadly inclusive definition of dyspepsia that includes "heartburn, epigastric pain, bloating, discomfort, early satiety, water brash or loss of appetite" (p. 4), noting that "[w]e are considering uninvestigated patients at the community level where there is considerable overlap between epigastric and heartburn symptoms" (p. 3).

Delaney and colleagues (2005) identified 25 randomized controlled trials that met inclusion criteria. They performed systematic reviews of five different comparisons, two of which are relevant to this report ("initial endoscopy versus acid suppression" and "*H. pylori* test and treat versus endoscopy").

<u>Initial endoscopy versus acid suppression</u>

Delaney and colleagues (2005) included five studies that compared prompt endoscopy against initial pharmacological therapy, and data from four of the trials (N=1125) was able to be pooled. One study (Goodson 1989) identified by Delaney and colleagues (2005) looked at

"early investigation" with a barium meal study versus acid suppression, and is not considered in their report. One of the five endoscopy studies (Laheij 1998) was excluded from meta-analysis because it reported only symptom-free days rather than a global measure of improvement. The meta-analysis of the remaining four trials showed no statistically significant difference in relative risk (RR) (RR 0.89, 95% CI 0.77 to 1.02) for symptom improvement between the two interventions.

H. pylori test and treat versus endoscopy

Delaney and colleagues (2005) included five trials that compared a test for *H. pylori* with subsequent eradication therapy, as indicated, against prompt endoscopy. Three studies included patients who had been referred to an endoscopy center by GP physicians (Heaney 1999; Lassen 1998; McColl 2002), while a fourth randomized patients in the primary care setting (Arents 2003). An unpublished study (Duggan 1999) compared test and treat with both prompt endoscopy and empirical PPI in patients presenting to primary care. Finally, the authors included individual patient data from a small primary care study (Myres 2002) that failed to adequately recruit and was terminated. Individual data was obtained from all studies except Heaney (1999) (p. 10). All studies used a symptom score to assess outcome, but four different tools were used and these were therefore dichotomized in the meta-analysis into "improved" versus "not improved."

Pooling data at the trial level, Delaney and colleagues (2005) found no statistically significant difference in outcomes between the two strategies (RR 0.95, 95% CI 0.79 to 1.15). There was high heterogeneity, due to the inclusion of the Duggan (1999) study, which showed a significant benefit to endoscopy-based management. This was addressed with the individual patient data (IPD) meta-analysis of the 1,924 participants, which eliminated the heterogeneity and showed a small but statistically significant benefit of endoscopy-based management (Peto OR 0.75, 95% CI 0.58 to 0.96; RR 0.95, 95% CI 0.92 to 0.99).

RCTs

No randomized controlled trials were identified in our search beyond those used in the above meta-analyses.

Other study designs (e.g. cohort studies)

Our search identified one fair quality prospective cohort study (Madan 2005) addressing the sensitivity and specificity of six different modalities for diagnosis of GERD. Madan and colleagues (2005) performed a series of six diagnostic tests on 70 patients between the ages of 18 and 80 presenting with heartburn and/or reflux for at least two days per week for six weeks. Following clinical evaluation and determination of eligibility for the study, patients ceased all use of proton pump inhibitors (PPIs) and H2-blockers for one week. Patients then underwent upper endoscopy with biopsy and histological evaluation. Upon completion of endoscopy, the subjects took omeprazole 40mg every morning and 20mg every evening for one week. A symptom score reduction of at least 50% was considered a "positive" omeprazole challenge test (OCT). Patients again stopped acid-suppressing medication for one week before

undergoing the final two tests, GER scintigraphy and 24-hour esophageal pH monitoring.[2] The authors note that "this is probably the first study that has compared all available diagnostic modalities in a large cohort of patients under similar conditions," noting that the most recent such trial prior to theirs was in 1978 (Madan 2005, p. 36).

The Madan study (2005) considered a concordance of three out of the six tests to be a "true positive" case of GERD. The authors then calculated sensitivity and specificity for each individual test against this gold standard. Parameters for the studies most relevant to this report are given in Table 1 below.

Table 1. Accuracy of diagnostic tests when gold standard taken as concordance of three or more tests (adapted from Madan 2005)

Test	Sensitivity (%)	Specificity (%)	Positive predictive value (%)	Negative predictive value (%)	Positive likelihood ratio	Negative likelihood ratio
Omeprazole challenge test	84.4	56	77.5	66.6	1.9	0.29
Endoscopy	64.4	84	87.8	56.7	4	0.43
Histology	82.2	60	78.7	65.1	2.06	0.3
pH monitoring	77.7	92	94.5	69.6	9.75	0.24

As a single test, 24-hour pH monitoring had the highest level of diagnostic accuracy (true positive plus true negative tests). This also held true when only endoscopy-negative reflux disease (ENRD) patients were considered. The authors note, however, that the sensitivity of pH monitoring is lower than typically desired for a gold-standard test, as almost a quarter of patients with GERD will have normal pH readings. The authors also note that pH monitoring is not as widely available or inexpensive as some of the other tests. A sequential combination of OCT, endoscopy and histology was found to have a sensitivity of 100%. The authors conclude therefore that serial use of these three tests (OCT followed by endoscopy for those who test negative, with histology performed on those without visible endoscopic evidence of GERD) should be the standard diagnostic workup, and that "pH monitoring is required only to confirm or exclude GERD in doubtful cases" (Madan 2005, p. 35).

Overall summary, quality and limitations of the evidence

[2] Gastrointestinal scintigraphy is a procedure whereby radioopaque material (technetium-99m sulfur colloid) is orally administered and the patient is placed supine under a gamma camera. Serial images are obtained to determine the number of reflux events, duration, and proximal extent of the reflux. Esophageal pH monitoring involves the placement of a thin plastic catheter nasogastrically to position a sensor just above the lower esophageal sphincter. The sensor records each reflux of acid, which is registered by a recorder attached to the nasal end of the catheter.

Systematic Review

One good quality systematic review (Delaney 2005) included two separate meta-analyses, one of early endoscopy versus empiric PPI and one of early endoscopy versus test-and-treat for *H. pylori.* The first meta-analysis found no difference in symptomatic cure at 12 months between endoscopy and PPI arms. The second meta-analysis was first done by pooling trial-level data and found no difference in effect but a high degree of heterogeneity. When an alternate analysis using individual patient data was done, heterogeneity was eliminated and a small but statistically significant benefit to upper endoscopy emerged (Peto OR 0.75, 95% CI 0.58 to 0.96; RR 0.95, 95% CI 0.92 to 0.99).

A limitation of the first meta-analysis performed by Delaney and collegeaues (2005) is that, in one of the included studies (Bytzer 1994), patients were recruited after having been referred by a GP physician to an endoscopy center. This would bias the results in favor of endoscopy, since patients who are referred out of a GP's office have a higher likelihood of pathology. This same study also failed to treat the patients found to have peptic ulcer disease on endoscopy with *H. pylori* eradication therapy, as was done in the other three studies. This would bias the results in the opposite direction for this study, since patients undergoing endoscopy did not receive the same treatment as endoscopy patients in other trials. Finally, the authors note that two trials (Duggan 1999; Lewin 1999a) were not yet peer-reviewed at the time of their inclusion into this review and should be taken with caution.

There are several possible explanations for the finding that endoscopy was more effective than a test-and-treat strategy in the IPD meta-analysis. Unblinded studies are known to overestimate effect. Three of the five included studies allowed patients with positive endoscopic findings to be treated with *H. pylori* eradication therapy. Endoscopy patients used more PPIs than test-and-treat patients, and this may account for the improvement in symptoms. Finally, this meta-analysis may have simply amplified a bias present in the smaller studies.

Cohort Study

A single fair quality prospective cohort study (Madan 2005) of 70 patients found that 24-hour pH monitoring is the most accurate single diagnostic test for GERD, when a concordance of three separate tests is taken as the gold standard. However, the authors note that there are barriers to its widespread use including invasiveness, cost, and availability. When making clinical decisions, the most "accurate" test may not be the best choice, depending upon the goals of physician and patient. In the case of GERD, sensitivity may be more important than overall accuracy, since the goal of the work-up is to minimize false negatives and treat all cases of GERD appropriately. The authors conclude that a serial application of an omeprazole challenge test, endoscopy, and finally histopathology achieves a sensitivity of 100% for GERD diagnosis.

There are several limitations to this cohort study. It should be noted that, although histopathology was treated as a separate test in the calculations of this study, in the real clinical setting it will only be done in the setting of and in conjunction with endoscopy and never entirely on its own. Second, the authors did not perform any testing for *H. pylori* in their study

population. It is likely that some of the subjects would have tested positive and may have responded to eradication therapy, eliminating the need for subsequent endoscopic investigation. The study population is probably not representative of the typical US population presenting for initial evaluation in primary care, as evidenced by the high prevalence of Barrett's esophagus in the study population (4 of 70). Finally, this study did not report confidence intervals for its measures of test performance.

Overall, the evidence does not point to a clinically relevant benefit of prompt upper endoscopy over test and treat strategies or empiric PPI therapy for uninvestigated GERD symptoms in the primary care setting.

Overall strength of evidence: High

KQ2. Are there clinical signs and symptoms useful to identify patients for whom early endoscopy is effective to improve health outcomes and/or disease management?

One good quality meta-analysis (Vakil 2006), one good-quality prospective cohort study (Marmo 2005), and three fair quality prospective cohort studies (Bowrey 2005, Rossi 2002, Veldhuyzen van Zanten 2006) were identified for this Key Question.

Systematic reviews and technology assessments

The search strategy identified one good quality meta-analysis of 17 prospective cohort studies (Vakil 2006) relevant to this Key Question. Vakil and colleagues (2006) analyzed data from 17 studies to determine the diagnostic performance of alarm symptoms (e.g., weight loss, dysphagia, and anemia), computer models based on symptom questionnaires, and professional clinical opinion in the prediction of gastrointestinal malignancy. Studies were included if their populations were greater than or equal to 16 years of age; if they evaluated at least 100 patients; if they collected data prospectively; if dyspepsia and alarm symptoms were recorded along with endoscopic diagnosis; and if the entire study diagnosed at least one GI malignancy.

A total of 57,363 patients were included in the meta-analysis of 17 studies. A total of 458 (0.8%) of the patients had cancer. The performance statistics for the investigated predictors of GI malignancy are given in Table 2. Overall, the sensitivity of "alarm symptoms" varied from 0% to 83% with considerable heterogeneity between studies [note: studies with sensitivity equal to 0% were excluded from pooled analyses and are not reflected in Table 2]. Anemia was the least sensitive indicator, with a pooled sensitivity of 13% with no significant heterogeneity. However, anemia was highly specific (Sp=95%, 95% CI 92% to 97%). Clinical opinion also had a low sensitivity (Sn=29%, 95% 10% to 88%), but a high specificity (Sp=97%, 95% CI 96% to 99%).

The most sensitive predictor was computer modeling, with a sensitivity of 96% (95% CI 92% to 100%) with no significant heterogeneity. Specificity of computer modeling was low at 34% (95% CI 27% to 44%). The presence of one or more alarm symptom, which is a criterion used in many treatment guidelines, was only 67% sensitive for GI malignancy (95% CI 54% to 83%) with

heterogeneity; and 66% specific (95% CI 55%, 79%) with a high degree of heterogeneity. Vakil and colleagues (2006) conclude that "alarm features, clinical diagnoses, and computer models are relatively inaccurate predictors of an underlying malignancy" (p. 396).

RCTs

No randomized controlled trials were identified in our search.

Table 2. Performance of Predictors for GI Malignancy (adapted from Vakil 2006)

	N; number of studies	Sensitivity (95% CI)	Specificity (95% CI)	+ LR for malignancy (95% CI)	Heterogeneity present?
Clinical opinion	n=3159; 3 studies	29% (10%, 88%)	97% (96%, 99%)	Not Reported	Not reported
Computer models based on symptom questionnaires	n=8043; 5 studies	96% (92%, 100%)	34% (27%, 44%)	1.49 (1.33, 1.67)	No, $Q=4.4_4$ and P=0.36 for sens; Yes, $Q=170_4$ and P<0.0001 for spec
Weight loss	n=48499; 8 studies	49% (37%, 65%)	84% (81%, 87%)	Not reported	Yes, $Q=34.0_7$ and P<0.001 for sens; $Q=143_7$ and P<0.001 for spec
Dysphagia	n=9646; 5 studies	39% (23%, 66%)	85% (78%, 92%)	Not reported	Yes, $Q=19.5_4$ and P<0.001 for sens; $Q=852_4$ and P<0.001 for spec
Anemia	n=42,327; 4 studies	13% (8%, 20%)	95% (92%, 97%)	Not reported	No for sens; Yes for spec with $Q=77_2$ and P<0.001
≥1 alarm feature	n=46,161; 7 studies	67% (54%, 83%)	66% (55%, 79%)	2.74 (1.47, 5.24)	Yes, $Q=7.6_4$ and P=11 for sens; $Q=1779_4$ and P<0.001 for spec.
All approaches	n=57,363; 17 studies	Pooled DOR 7.49 (4.37, 12.8)		Not reported	Yes; $\chi^2=44_{16}$, P<0.001

Other study designs (e.g. cohort studies)

The search identified one good and three fair quality prospective case series (Marmo 2005; Bowrey 2006, Rossi 2002, Veldhuyzen van Zanten 2006) of relevance to this Key Question. Rossi and colleagues (2002) assessed 1,777 consecutive patients presenting to an "open-access" upper endoscopy facility in Northern Italy for the presence of American Society for

Gastrointestinal Endoscopy (ASGE)-approved indications, based on the current ASGE guideline at the time. The authors then correlated the presence of these indications with "clinically relevant" endoscopic findings. Those findings deemed to be clinically relevant are listed below:

- Erosive gastritis, esophagitis, or duodenitis;
- Duodenal ulcer;
- Barrett's esophagus;
- Gastric ulcer;
- Gastric neoplasms;
- Esophageal varices;
- Esophageal stenosis;
- Esophageal neoplasms; and
- Gastric varices.

Endoscopy was appropriate by ASGE guidelines in 84.4% of cases. The most common indication was dyspepsia (53.5%; 27% of patients with dyspepsia were greater than 45 years of age). Diagnosis of clinically relevant disease occurred in 47.4% of patients with an ASGE-approved indication, but only 28.8% in the absence of such an indication (OR 2.23, 95% CI 1.55 to 3.22, $p < 0.01$). The overall pre-test probability of making relevant findings on endoscopy was 45%. This was marginally improved to 47% with the presence of ASGE-approved criteria, and markedly decreased to 29% in the absence of ASGE criteria (Rossi 2002, p. 717). Only 6.5% of patients with ASGE criteria had normal endoscopy, while 11.9% of those without criteria were normal. Gastric or esophageal cancer was discovered in 32/788 patients with criteria (4%), and 6/198 patients with no criteria (3%).

Alarm symptoms prompted endoscopy in 13% of patients. Specific alarm symptoms addressed in the Vakil meta-analysis (2006) were also measured in the Rossi study (2002). Dysphagia had a 1% sensitivity and a 99% specificity for relevant disease (95% CI not reported); positive likelihood ratio (LR) was 1.24, and negative LR was 0.99. Anemia had a 3% sensitivity and 97% specificity (95% CI not reported); positive LR was 0.84 and negative LR, 1.01.

The authors conclude that appropriateness criteria proposed by the ASGE are useful for certain activities, such as monitoring quality assurance programs in open-access endoscopy. However, they should not be used to select which patients undergo endoscopy as this practice is "neither reliable nor safe and carries the risk of missing clinically relevant diagnoses" (Rossi 2002, p. 719).

In a good-quality prospective study, Marmo and colleagues (2005) collected data on all patients presenting for endoscopy at one of four community-based hospitals over a period of two years, excluding those with alarm symptoms or who regularly used NSAIDs (final included n=5,224). Twenty-two patients without alarm symptoms were found to have cancer (0.4%) whereas

cancer was found in 36 of 464 patients with alarm symptoms (7.7%). Alarm symptoms were considered to be unexplained weight loss, recurrent vomiting, dysphagia, hematemesis or melena, anemia, and palpable mass. Of the patients who had none of these, mean age among those with malignancy was significantly higher than in those without (66.2 ± 14.7 vs 47.9 ± 15.8, p<0.0001), and mean age of males with malignancy was lower than for females (63.6 ± 14.1 for males and 72.7 ± 15.4 for females, p=0.08).

In a fair-quality prospective cohort study, Bowrey and colleagues (2006) evaluated cancer dectection rates in a population of patients referred by their primary care physician for endoscopy. In this "open-access" system, any patient over 35 with dyspepsia or dysphagia was eligible for referral. Of the 4,018 patients completing endoscopy, 138 (3%) were found to have malignancy. Of those with malignancy, 85% presented with alarm symptoms, but 15% (n=19) had no alarm symptoms. Those without any alarm symptoms tended to have a more favorable tumor grade than those with alarm symptoms (11% stage IV vs 47% stage IV), and a longer median survival time (39 months vs 4 months for patients with epigastric mass or 10 months for patients with unexplained weight loss). The authors conclude that open-access endoscopy confers a survival advantage, but fail to take into account the high risk of lead-time bias; that is, the possibility that patients without alarm symptoms whose cancers were diagnosed early would have died at the same point in time if their cancers were diagnosed later, i.e., after the appearance of alarm symptoms.

A fair-quality prospective study by Veldhuyzen van Zanten and colleagues (2005) used data from the Canadian Adult Dyspepsia Empirical Therapy Prompt Endoscopy (CADET-PE) trial to assess the prevalence of Barrett's esophagus in adults (>18) with dyspepsia and to identify potential risk factors for its presence. Barrett's esophagus was identified in 15 of 379 (4%) patients over the age of 50, and in 10 of 661 (1.5%) patients age 50 and younger, a statistically significant difference (p = 0.013). Among patients with identified Barrett's esophagus, 64% had reported heartburn or acid regurgitation as their dominant symptom, whereas this was the dominant symptom in only 37% of patients without BE (p = 0.0062). The BE patients had an average length of symptoms of 10 years, but 44% had symptoms < 5 years and 16% less than 1 year (p. 597).

Overall summary, quality and limitations of the evidence

One good quality meta-analysis (Vakil 2006) of a large number of patients found that alarm symptoms, clinical opinion, and computer modeling programs based on symptom questionnaires were all unreliable predictors of gastrointestinal malignancy. Sensitivity ranged from 0% to 83% while specificity varied from 40% to 98%. A fair quality prospective cohort study (Rossi 2002) determined that ASGE guideline criteria were poorly correlated with clinically relevant endoscopic findings, although their presence does marginally increase the pre-test probability of endoscopy (from 45% to 47%) and their absence lowers it (from 45% to 29%). A good quality prospective study (Marmo 2005) found a much higher prevalence of malignancy in patients with alarm symptoms than in those without (7.7% vs 0.4%). A fair-quality prospective study found that 15% of patients with malignancy presented with no alarm

symptoms; however, due to the high risk of lead-time bias it is not clear that there is a survival advantage to early endoscopy for these patients.

The meta-analysis by Vakil and colleagues (2006) was of good quality and has relatively few limitations. It did include one study from China, where there is a higher prevalence of gastric malignancy, which would have tended to overestimate the positive predictive value of alarm symptoms. The authors report that exclusion of this China study did not alter the conclusions. Some of the studies took place in secondary care, and thus a referral bias may be present. The direction of such a bias on the performance of alarm symptoms as harbingers of malignancy cannot be predicted.

One prospective cohort study (Rossi 2002) looked at consecutive patients presenting to an open-access endoscopy center. Seventy percent were outpatient, while 30% were hospital inpatients at the time of the study. The impact of including these two disparate populations is not assessed. The study was published in 2002, and ASGE guidelines have since been updated, and so conclusions must be taken with caution.

If alarm features and the symptoms included in specialty guidelines are not reliable, how should clinicians choose patients for endoscopy? Vakil and colleagues (2006) suggest that, in the absence of compelling predictors, the concept of "alarm symptoms" should not be abandoned at this time. They suggest age greater than 55 as "the most logical alternative strategy… because the incidence of upper GI malignancy is negligible in Western populations at younger ages and only rises in prevalence above the age of 55 years" (Vakil 2006, p. 398). The use of age as a factor in pre-test probability of malignancy is supported by the prospective cohort studies considered here. Vakil and colleagues recommend further research into alarm symptoms and physical exam findings, as diagnostic accuracy may improve when certain features occur in concert. They also note that the alarm symptoms themselves are not well-defined: how much weight loss qualifies as alarming? Is dysphagia concerning if it is not progressive? Future research should endeavor to define alarm symptoms more precisely.

Overall strength of evidence: Moderate

KQ3. For what diagnoses and within what time frames, is repeat endoscopy indicated versus other tests or no follow-up tests for surveillance of disease progression and/or treatment response? Does repeat endoscopy change treatment and outcome?

One good quality prospective cohort study (Westbrook 2005) was identified for this Key Question.

Systematic reviews and technology assessments

The search did not identify any systematic reviews or technology assessments relevant to this Key Question.

RCTs

The search did not identify any randomized controlled trials relevant to this Key Question.

Other study designs (e.g. cohort studies)

The study identified one good quality prospective cohort study (Westbrook 2005) relevant to this Key Question. Westbrook and colleagues (2005) investigated 302 patients who had undergone endoscopy following gastroenterology referral for dyspeptic symptoms at one of two Australian teaching hospitals 18 months prior. Patients were interviewed at study onset (FU1) and then again 8 to 9 years post-index endoscopy (FU2) to determine persistence of symptoms, use of acid-suppressing medications, and use of repeat endoscopy.

In all, 34% (95% CI 29.0% to 39.8%) of patients were asymptomatic at FU1 and 41% (95% CI 35.6% to 46.6%) were symptom-free at FU2, indicating that the majority of these patients had ongoing symptoms. The authors found no association between endoscopic diagnosis (normal, normal with reflux symptoms, peptic ulcer disease, esophagitis only, or esophagitis with peptic ulcer disease) and symptomatic outcome at either FU1 or FU2 (χ^2=14.7, df=12, P > 0.05). At FU2, 31% of patients (n=92) had undergone repeat endoscopy, including 50% of patients whose initial diagnosis was "esophagitis only." There was no association between repeat endoscopy and symptomatic outcome (χ^2=0.6, df=1, P > 0.05).

Overall summary, quality and limitations of the evidence

Only one study, a prospective cohort study of good quality (Westbrook 2005), addressed the question of repeat endoscopy in patients who initially presented with dyspeptic symptoms and had non-malignant endoscopic findings. About a third of these patients underwent a subsequent endoscopy within nine years of the index study. The results of these later endoscopies are not known; however, patients who had further endoscopy were neither more nor less likely than other patients to be symptomatic at FU2 (χ^2=0.6, df=1, P > 0.05).

Data was collected by one investigator via structured telephone interview, lowering the risk of reporting bias. Recall bias is a possibility, but the authors did query patients at FU1 and FU2 regarding the symptoms that had prompted their initial presentations, and found good concordance with the medical record (Westbrook 2005, p. 620). This would indicate that the patients' recollections of their illnesses were reliable. The fact that all patients were at one of two Australian hospitals may limit generalizability to other populations. The lack of information on the diagnoses made at subsequent endoscopies is a major limitation of this study.

Overall, evidence is limited on the question of repeat endoscopy for any patients with initial dyspepsia who have non-malignant findings on their index endoscopy.

Overall strength of evidence: Low

KQ4. What are the potential harms of performing upper endoscopy in the diagnostic or treatment planning workup of adults with upper GI symptoms? What is the incidence of these harms? Include consideration of progression of treatment in unnecessary or inappropriate ways.

One decision analysis (Spiegel 2002) and one good quality meta-analysis (Ford 2005) were identified for this Key Question.

Systematic reviews and technology assessments

There is very little mention of harms of endoscopy in the systematic reviews, meta-analyses, and economic evaluations identified by this search. The decision analysis by Spiegel and colleagues (2002) indicates that "the most common complications of endoscopy are cardiorespiratory and generally require only additional observation. Our model assumed a 0.02% probability of severe endoscopic complications requiring hospitalization and surgery. The costs of severe endoscopic complications were modeled after the surgical repair of a perforation" (p. 1275).

One meta-analysis of five trials comprising 1924 patients stated "there were no adverse events reported as a direct result of endoscopy" (Ford 2005, p. 1842).

RCTs

The search did not identify any randomized controlled trials relevant to this Key Question.

Other study designs (e.g. cohort studies)

The search did not identify any other comparative studies relevant to this Key Question.

Overall summary, quality and limitations of the evidence

Because so little information could be gathered from the initial search, we conducted a separate MEDLINE® search for complications of endoscopy (see Appendix A). Unfortunately there were no studies that could be included. All but one of the systematic reviews, meta-analyses, and economic evaluations neglected to factor harms of endoscopy into their reports.

According to the authors of one economic evaluation, most harms of endoscopy are cardiorespiratory in nature; that is, related to the procedure sedation rather than the endoscope itself. These authors used a 0.02% incidence of severe harms and modeled their economic assumptions on the surgical repair of perforation.

Our search identified no data on harms associated with empiric acid-suppression or *H. pylori* test-and-treat treatment strategies.

Overall strength of evidence: Insufficient

KQ5. What is the evidence that upper endoscopy has differential efficacy or safety issues in sub populations? Including consideration of:

a. Gender
b. Age
c. Psychological or psychosocial co-morbidities
d. Other patient characteristics or evidence based patient selection criteria, especially comorbidities of diabetes, high BMI, and chronic ingestion of alcohol

e. Provider type, setting or other provider characteristics
f. Payer / beneficiary type: including worker's compensation, Medicaid, state employees?

One good qualtiy meta-analysis (Ford 2005), two good-quality economic evaluations (Barton 2008; Makris 2003) , three prospective cohort studies (Marmo 2005, good quality; Bowrey 2006, fair quality; Veldhuyzen van Zanten 2006, fair quality), and one poor quality retrospective cohort study (Connor 2004) were identified for this Key Question.

Systematic reviews and technology assessments

One meta-analysis (Ford 2005) included prespecified subgroup analyses. Ford and colleagues (2005), in their individual patient data analysis comparing prompt endoscopy with *H. pylori* test-and-treat, considered gender, age (less than 50 years or 50 years and older), predominant symptom at trial entry (epigastric pain or heartburn), and initial *H. pylori* status. In these analyses, the only difference observed was a small but statistically significant effect in favor of endoscopy for patients aged 50 years and older (RR=0.90, 95% CI 0.82 to 1.00, $p < 0.05$). The relative risks (95% CI) of all subgroup analyses are as follows:

Females:	0.95 (0.90 to 1.00)
Males:	0.97 (0.0.91 to 1.04)
50 years and older:	0.90 (0.82 to 1.00, $P < 0.05$)
Less than 50 years:	0.97 (0.93 to 1.01)
Predominant heartburn:	0.99 (0.93 to 1.04)
Predominant epigastric pain:	0.96 (0.89 to 1.04)
H. pylori positive:	0.93 (0.86 to 1.01)
H. pylori negative:	0.97 (0.93 to 1.02)

Two economic evaluations (Barton 2008; Makris 2003) considered subgroups to some extent. Barton and colleagues (2008) executed their simulation model in both a 30 year old and a 60 year old hypothetical population. In both populations, endoscopy with biopsy for *H. pylori* and eradication as indicated (contributing 4.3496 QALYs in 30 year olds and 4.3860 QALYs in 60 year olds) was more effective than endoscopy without biopsy (contributing 4.3387 QALYs in 30 year olds and 4.3712 QALYs in 60 year olds). Also in both populations, a trial of PPI followed by endoscopy with biopsy was the most effective strategy (contributing 4.3541 QALYs in 30 year olds and 4.3942 QALYs in 60 year olds).

Makris and colleagues (2003) also divided their hypothetical populations into age cohorts, ≤45 years old (Group A), and 45 years old and older (Group B). Unfortunately, effectiveness data were not reported for Group B and so comparison cannot be done.

RCTs

The search did not identify any randomized controlled trials relevant to this Key Question.

Other study designs (e.g. cohort studies)

This search identified one good quality prospective cohort study (Marmo 2005), two fair quality prospective cohort studies (Bowrey 2006 and Veldhuyzen van Zanten 2006), and one poor quality retrospective cohort study (Connor 2004) relevant to this Key Question.

Marmo and colleagues (2005) published a good-quality prospective cohort study of 5,224 adults with uncomplicated dyspepsia, excluding patients with NSAID use or alarm symptoms. Malignancy was discovered in 22 patients (0.4%). Eighteen of these patients (81.8%) were >45 years of age, and sixteen (72.7%) were male. The mean age of males with malignancy was 63.6 ± 14.1 years, which was significantly lower than the mean age of females with malignancy (72.7 ± 15.4 years; $p < 0.05$). Overall, the mean age of patients with malignancy was significantly higher than the mean age of patients without malignancy (66.2 ± 14.7 years versus 47.9 ± 15.8 years; $p < 0.0001$). The authors created a prediction tool combining age and gender, with a 35 year cutoff for males and a 57 year cutoff for females, and tested it in a second "split sample" of 3,684 patients. In the split sample, the shift in age cutoff to 35 years for males and 56 years for females was demonstrated to increase diagnostic yield by 12% (i.e., 12% more patients with cancer are included in these selection criteria, without increasing the total number of endoscopies performed). Marmo and colleagues conclude that "Only the combination of age and gender was able to predict upper GI malignancy in patients with uncomplicated dyspepsia. All the other variables considered as possible risk factors [*H. pylori* infection, comorbidities, coprescriptions] had no predictive value" (p. 787).

A fair-quality prospective study by Bowrey and colleagues (2005) was primarily aimed at assessing the value of alarm symptoms for predicting malignancy, but did also touch on the issues of age and gender. All patients age 35 years and older presenting for endoscopy (n=4,018) were included. Nineteen of 123 patients diagnosed with malignancy (15.4%) had no alarm symptoms and would be comparable to the "uncomplicated dyspepsia" patients in the Marmo 2005 study; 13 of those were male and 6 were female (p=0.61). Five of those nineteen patients with malignancies and no alarm symptoms were younger than 55 years of age (25%). Overall, the prevalence of malignancy in the cohort increased along with age, with only a 0.3% prevalence among those < 41 years of age, and a 16% prevalence among patients >80 years old.

A fair-quality prospective study by Veldhuyzen van Zanten and colleagues (2006) considered the outcome of histologically diagnosed Barrett's esophagus (BE) in a population undergoing prompt endoscopy as part of the CADET-PE trial. The prevalence of BE was 2.4% overall. The prevalence was significantly higher in patients over 50 years of age (4% versus 1.5%, $p = 0.013$). The prevalence among males was higher than among females, but this difference fell shy of statistical significance (2.4% of males versus 2% of females, $p = 0.068$).

Connor and colleagues (2004) performed a retrospective chart review of 264 patients in the Kansas City Veterans Affairs Medical Center Gastroenterology department who had undergone upper endoscopy for dyspeptic symptoms. The definition of dyspepsia included upper abdominal pain or discomfort, with or without heartburn, reflux, nausea, or vomiting. Patients

with alarm symptoms were excluded. The population was 95% male, 73% Caucasian, with a mean age of 57 years. The incidence of Barrett's esophagus was 6.1%, and erosive esophagitis was present in 23.8%. These two endoscopic findings were tested for correlation with patient demographics (e.g., age, gender, race), NSAID use, or presence of hiatal hernia. The only significant correlation was with hiatal hernia (Fisher's exact test, p = 0.0032). There were no significant associations between demographics and endoscopic diagnosis.

Overall summary, quality and limitations of the evidence

The search uncovered no evidence related to most of the subpopulations named in the Key Question. Gender was evaluated in a good quality meta-analysis (Ford 2005) and a poor quality retrospective cohort study (Connor 2004) and no differential effectiveness was found. Age was the only factor associated with differential effectiveness in the meta-analysis. Age was identified as an independent risk factor for malignancy in three prospective cohort studies, two of fair quality (Bowrey 2006, Veldhuyzen van Zanten 2006) and one of good quality (Marmo 2005).

Ford and colleagues (2005) performed subgroup analyses based on age, gender, predominant symptom, and presence of *H. pylori*. There was a small but statistically significant benefit of endoscopy in patients 50 years of age and older (RR=0.90, 95% CI 0.82 to 1.00, $p < 0.05$); no other associations were found. In a good quality economic evaluation simulation model, relative effectiveness of interventions was the same in hypothetical 30 year olds as in hypothetical 60 year olds (Barton 2008). A poor quality retrospective chart review (Connor 2004) of VA patients failed to find any correlation between significant endoscopic findings (Barrett's esophagus and/or erosive esophagitis) and age, gender, race, or NSAID use. Two fair-quality prospective cohort studies (Bowrey 2006, Veldhuyzen van Zanten 2006) affirm the increasing risk of malignancy or Barrett's esophagus with advancing age. A good quality prospective cohort study (Marmo 2005) proposes a predictive tool using a combination of age and gender (>35 years for males, >56 years for females).

Overall strength of evidence: Moderate (Age), Insufficent (all others)

KQ6. What is the evidence of cost and cost-effectiveness of endoscopy compared to other treatment strategies when used in diagnostic or treatment planning workups of adults with upper GI symptoms?

Economic modeling studies and cost-effectiveness analyses

Our search identified ten studies that met inclusion criteria, six economic model evaluations (Barkun 2010; Barton 2008; García-Altés 2005; Makris 2003; Spiegel 2002; You 2006) and four RCTs (Duggan 2008; Ginannini 2008; Kjeldsen 2007; Klok 2005) that included cost-effectiveness analyses. Since procedural and pharmaceutical costs vary across health care systems, cost-effectiveness evaluations done outside the US should be taken with caution. Only two included studies, a second-order simulation model and a decision analysis, utilized US data (Barton 2008; Spiegel 2002). All studies investigated adult patients who were presenting for initial evaluation and management of upper gastrointestinal symptoms.

The largest evaluation was a good quality economic evaluation (Barkun 2010) performed with an aggregation of four complementary Canadian Adult Dyspepsia Empiric Treatment (CADET) studies. This design was able to aggregate data from 2,236 individual patients in Canada who had enrolled in one of the four studies. Patients were adults presenting to their primary care clinician with at least three months of uninvestigated upper GI symptoms, who did not have alarm symptoms (e.g., unintentional weight loss, vomiting, dysphagia, hematemesis, melena, fever, jaundice, or anemia) and were not regular users of nonsteroidal anti-inflammatory medications. Interventions compared included acid-suppressing medication (omeprazole or ranitidine) based on the Canadian Dyspepsia Working Group clinical management tool (CanDys omeprazole and CanDys ranitidine);[3] empirical omeprazole or ranitidine; endoscopy followed by omeprazole; and endoscopy followed by ranitidine. Costs were expressed in 2007 Canadian dollars. Incremental cost-effectiveness analyses demonstrated that no single approach was the dominant best choice based on cost-effectiveness. However, at a clinically relevant willingness-to-pay threshold of CAN $30,000-CAN$70,000 per quality-adjusted life-year (QALY), the CanDys Omeprazole arm was the most cost-effective.

A fair quality modeled decision analysis from Spain (García-Altés 2005) identified a locally-validated scoring instrument followed by endoscopy as more cost-effective than prompt endoscopy, *H. pylori* test and scope, *H. pylori* test and treat, and empiric proton-pump inhibitor (PPI) strategies .

Four other modeling studies included testing for *H. pylori* in their analysis, and found it to be the most cost-effective intervention when compared to empiric initial treatment and/or prompt endoscopy. One US study (Barton 2008), a good quality simulation model, found that, among 60 year olds, test-and-treat was the most cost-effective intervention with an incremental cost-effectiveness ratio of US$6,740 per QALY. A very similar study from Canada also found the test-and-treat approach to be more cost-effective, at CAN$2,970 per QALY, compared with empirical acid-suppression, a barium test, endoscopy, or empirical eradication of *H. pylori* (Makris 2003). A third good quality modeled study from China (You 2006) found that the test-and-treat approach was more cost-effective than empiric PPI or prompt endoscopy, but noted that the cost-effectiveness of test-and-treat was sensitive to the prevalence of *H. pylori* in the population.

A good quality decision analysis using US data (Spiegel 2002) found that adding a 6-week trial of PPI, either before test-and-treat or interposed between test-and-treat and endoscopy,

[3] The Canadian Dyspepsia Working Group's "CanDys Clinical Management Tool" recommends stratifying patients into two groups: those in whom symptoms of heartburn or reflux are dominant, and those in whom heartburn and/or reflux are not dominant. In the CanDys omeprazole arm, heartburn-predominant patients were treated empirically with omeprazole 20mg daily for 8 weeks. Other patients were tested using the urea breath test for H. pylori. If positive, they received one week of eradication triple therapy; if negative, they received omeprazole 20mg daily for four weeks. In the CanDys ranitidine arm, patients were started on 150mg ranitidine twice daily, with step-up to omeprazole for heartburn-predominant patients with persistent symptoms after four to eight weeks of ranitidine.

increased cost-effectiveness over a strategy of going directly from test-and-treat to endoscopy in a population of patients greater than 45 years old. Acid reflux and regurgitation were excluded as dominant symptoms and no alarm symptoms were present as inclusion criteria for this population. Their conclusion about preferred strategies remained even after sensitivity analysis.

The test-and-treat approach was favored in a fair quality RCT from the UK (Duggan 2008) when compared with prompt endoscopy or empirical PPI. There was not a substantial difference in the effectiveness of these alternative strategies. However, 39% of patients assigned to the empiric PPI arm of the trial subsequently underwent upper endoscopy after an initial treatment failure. This resulted in higher spending amongst the empiric PPI arm and the lowest overall number of endoscopies in the test-and-treat arm. Finally, one poor quality RCT from the Netherlands found test-and-treat to be slightly more effective and less costly than prompt endoscopy, with an incremental cost-effectiveness ratio of €47,412 per QALY (Klok 2005).

In a good quality simulation model using a hypothetical population of US 30 year olds (Barton 2008), empiric PPI was the most cost-effective option with an incremental cost-effectiveness ratio (ICER) of US$9,740 per QALY when compared to a baseline strategy of antacid (agent unspecified) alone with no further interventions.[4] A poor quality Italian RCT (Giannini 2008) favored empiric PPI over endoscopy because it was found to be equally effective, but less expensive than endoscopy. However, this study was at high risk of bias in favor of PPI because the patients with positive endoscopy received identical treatment to those in the empiric PPI arm (40mg omeprazole), while those with negative endoscopy received 20mg omeprazole . Finally, a poor quality cost-effectiveness analysis of RCT data from Denmark (Kjeldsen 2007) showed that while endoscopy was slightly more effective, it was much more costly, with an ICER €13,905 per cure (defined as symptom-free at 12 months). This result was sensitive to age, with ICER increasing for patients less than 45 years of age . An important limitation of these two low quality studies is that they did not include *H. pylori* testing or treatment in their comparisons.

Finally, the individual patient data (IPD) meta-analysis conducted by Ford and colleagues (2005) using data from the Cochrane review included a cost-effectiveness analysis reporting costs and cost-effectiveness as weighted-mean difference (WMD). The authors found that endoscopy cost more than the test-and-treat strategy (WMD US$389, 95% CI $276 to $502), and this was due to the cost of the investigation. Prompt endoscopy was not a cost-effective alternative until the willingness-to-pay threshold was raised to $180,000 per symptom-free patient.

Table 3. Cost-Effectiveness Studies by Quality and Intervention Favored

Favored Intervention	Empiric PPI	*H. pylori* Test & Treat	Screening Questionnaire
Good Quality	• Barton 2008, US	• Barton 2008, US (*preferred strategy*	

[4] The authors explain that "[antacid alone] is not a realistic strategy but was used as a baseline comparison so that information from placebo-controlled trials could be used in the model" (p. 47).

Favored Intervention	Empiric PPI	*H. pylori* Test & Treat	Screening Questionnaire
	(*preferred strategy for hypothetical 30yo pop.*)	*for hypothetical 60yo pop.*) • Makris 2003, Canada (*preferred strategy for both hypothetical 18-45yo and ≥45yo pops.*) • You 2006, Hong Kong (*hypothetical ≥18yo pop.*) • Barkun 2010, Canada (*individual data from 2,236 Canadians ≥18yo*) • Spiegel 2002 (*T&T→PPI→EGD is the preferred strategy in US patients < 45 yo*) • Ford 2005 (IPD *meta-analysis of Cochrane data*)	
Fair Quality		• Duggan 2008, UK (*762 adults ≥18yo presenting to primary care with dyspepsia*)	• Garcia-Altes 2005, Spain (*hypothetical ≥18yo pop.*)
Poor Quality	• Giannini 2008, Italy (*612 adults ≥18yo presenting to GI centers with ≥3mo of symptoms*) • Kjeldsen 2007, Denmark (*368 adults ≥18yo presenting to primary care with dyspepsia*) **Note:** Neither study included a comparison with *H. pylori* test-and-treat	• Klok 2005, Netherlands (*281 adults ≥18yo presenting to primary care with dyspepsia*)	

Overall summary, quality and limitations of the evidence

With the exception of empiric therapy for US 30 year olds, all five good quality studies, one of two fair quality studies, and one of three poor quality studies favored *H. pylori* test-and-treat as the most cost-effective strategy for adults with uninvestigated symptoms of dyspepsia and/or GERD.

Only two studies, a second-order simulation model and a decision analysis both of good quality, evaluated the cost-effectiveness of different management strategies for new upper gastrointestinal symptoms in a US population (Barton 2008; Spiegel 2002). In the Barton study (2008), empiric PPI was the strategy of choice for 30 year old patients, and test-and-treat for *H. pylori* was the most cost-effective intervention for 60 year olds. Spiegel and colleagues (2002) looked only at patients less than 45 years of age, and determined that adding a 6-week trial of PPI to the test-and-treat strategy improved its cost-effectiveness. A good quality economic

evaluation of Canadian individual patient data concluded that no one strategy was the most clearly cost-effective, but at a clinically relevant willingness-to-pay threshold of CAN$30,000-70,000 per QALY, omeprazole treatment based on the CanDys protocol (which incorporates test-and-treat for those without heartburn or reflux as the predominant symptom) was the most cost-effective (Barkun 2010). Two other good quality models (Makris 2003; You 2006) also favored the test-and-treat approach, along with one fair and one poor quality RCT (Duggan 2008; Klok 2005).

One fair quality decision analysis favored a screening questionnaire followed by prompt endoscopy for high-risk patients (García-Altés 2005). Two poor quality RCTs found empiric PPI to be the most cost-effective alternative, but did not include comparison to *H. pylori* testing and treatment (Giannini 2008; Kjeldsen 2007). There were no economic studies that found prompt endoscopy to be the most cost-effective intervention.

Overall strength of evidence: Moderate

Guidelines

Three guidelines (American Gastroenterological Association (AGA) 2008; American Society for Gastrointestinal Endoscopy (ASGE) 2007a; ASGE 2007b) were identified in relation to the role of endoscopy for the diagnosis and early management of dyspepsia and GERD. An additional guideline specifically related to modifications in endoscopic practice for the elderly was identified from the ASGE (2006). Of the guidelines identified, one guideline was rated good quality (AGA 2008), two were rated fair quality (ASGE 2007a; ASGE 2007b), and one was rated poor quality (ASGE 2006).

Role of endoscopy in the diagnosis and management of GERD

One good quality (AGA 2008) and one fair quality (ASGE 2007b) guidelines were identified that discussed the role of endoscopy in the diagnosis and management of GERD. The AGA (2008) guideline recommends endoscopy "with biopsy for patients with an esophageal GERD syndrome with troublesome dysphagia" (p. 1385) and to evaluate patients who have not responded to an empirical trial of twice-daily PPI therapy and who have suspected esophageal GERD symptoms. The AGA (2008) guideline recommends against routine endoscopy for patients with "erosive or nonerosive reflux disease to assess for disease progression" (p. 1387) and finds insufficient evidence for routine upper endoscopy for chronic GERD symptoms to "diminish the risk of death from esophageal cancer" (p. 1389) or for screening of "Barrett's esophagus and dysplasia in adults 50 years or older with greater than 5 to 10 years of heartburn to reduce mortality from esophageal adenocarcinoma" (p. 1389).

The fair quality ASGE (2007a) guideline presents complementary recommendations to the AGA (2008) guideline. The ASGE (2007a) recommends that GERD can be diagnosed based on typical symptoms without the need for endoscopy. For patients who have alarm symptoms (e.g., GERD symptoms that are persistent or progressive despite appropriate medical therapy; dysphagia or odynophagia; involuntary weight loss greater than five percent; evidence of GI bleeding or

anemia; finding a mass, stricture, or ulcer on imaging studies; or persistent vomiting) endoscopy is recommended. Additionally the ASGE (2007a) recommends the use of endoscopy for the evaluation of patients with suspected extra-esophageal manifestations of GERD, with recurrent symptoms after endoscopic or surgical antireflux procedures, and for the screening for Barrett's esophagus in selected patients as clinically indicated.

Role of endoscopy in the diagnosis and management of dyspepsia

One guideline of fair quality (ASGE 2007b) was identified that discussed the role of endoscopy in the diagnosis and management of dyspepsia. The ASGE (2007b) acknowledges that "given the large number of patients with dyspepsia, it is not practical to perform endoscopy in all patients with dyspepsia" (p. 1071). Characteristics, such as age and alarm features, are recommended to be used to help determine whether a patient with dyspepsia should undergo initial endoscopy. The ASGE (2007b) suggests that patients between the age 45 to 55 years who have new onset dyspepsia and those who have alarm features (e.g., family history of upper-GI malignancy; unintended weight loss; GI bleeding or iron deficiency anemia; progressive dysphagia; odynophagia; persistent vomiting; palpable mass or lymphadenopathy; jaundice) should undergo an endoscopy. In addition, the ASGE (2007b) guideline recommends endoscopy be considered for patients without alarm features for whom there is clinical suspicion of malignancy. For patients that are younger than 50 years old and are *H. pylori* negative, the ASGE (2007b) guideline recommends an initial endoscopy or a short trial of PPI acid suppression. The ASGE (2007b) also gives a weak recommendation for endoscopy in "patients with dyspepsia who do not respond to empiric PPI therapy or have recurrent symptoms after an adequate trial" (p. 1074).

Modification of Endoscopy for Elderly Population

One guideline of poor quality (ASGE 2006) was identified that specified modification in endoscopic practice for a specific population. The ASGE (2006) recommends that endoscopy only be performed when the results will influence clinical management or outcome. The guideline states that "advanced age is not a contraindication to endoscopy" (p. 566) and that "preparation for endoscopy in geriatric or aged populations differs little from that for younger adults" (p. 567). Additionally the ASGE (2006) guideline suggests that intensified monitoring during the endoscopic procedure is appropriate for many elderly patients.

Summary of Guidelines and Quality Assessment

The search identified four guidelines of which one was rated as good quality, two were rated fair quality, and one was rated as poor quality. A summary and quality rating for each guideline is provided in Table 4. In general, the guidelines are in accord with the clinical evidence. Because of the poor reliability of alarm symptoms for predicting GI malignancy, guidelines should and do leave some room for clinical judgement. It is reasonable based on evidence to perform endoscopy in patients who have not responded to medical management. The AGA (2008) guideline also recommends against routine surveillance endoscopy for patients with reflux disease to assess for disease progression or resolution, which is supported by the evidence. The guidelines do not, however, take into account the increasing prevalence of

gastrointestinal malignancy after age 55. As noted under Key Question #5, age greater than 55 may be a reasonable criterion to apply when choosing whom to investigate.

Table 4. Role of Endoscopy in the Diagnosis and Management of GERD and Dyspepsia

Guideline	Recommended Use of Endoscopy	Not Recommended / Insufficient Evidence	Quality
AGA (2008) [GERD]	• Endoscopy with biopsy for patients with an esophageal GERD syndrome with troublesome dysphagia • Evaluation of patients who have not responded to an empirical trial of twice-daily PPI therapy and who have suspected esophageal GERD symptoms	• Routine endoscopy for patients with erosive or nonerosive reflux disease to assess for disease progression (Recommends Against) • Routine upper endoscopy for chronic GERD symptoms to diminish the risk of death from esophageal cancer (Insufficient Evidence) • Screening of "Barrett's esophagus and dysplasia in adults 50 years or older with greater than 5 to 10 years of heartburn to reduce mortality from esophageal adenocarcinoma (Insufficient Evidence)	Good
ASGE (2007a) [GERD]	• Patients who have alarm symptoms • Evaluation of patients with suspected extra-esophageal manifestations of GERD • Evaluation of patients with recurrent symptoms after endoscopic or surgical antireflux procedures • Screening for Barrett's Esophagus in selected patients as clinically indicated	• GERD can be diagnosed based on typical symptoms without the need for endoscopy	Fair
ASGE (2007b) [Dyspepsia]	• Patients between 45 to 55 years with new onset dyspepsia • Patients with alarm features • Patients without alarm features for whom there is clinical suspicion of malignancy • Patients younger than 50 years and who are *H pylori* negative, endoscopy or short trial of PPI acid suppression • Patients with dyspepsia who do	n/a	Fair

Guideline	Recommended Use of Endoscopy	Not Recommended / Insufficient Evidence	Quality
	not respond to empiric PPI therapy or have recurrent symptoms after an adequate trial		
ASGE (2006) [Considerations for older population]	• If results will influence clinical management or outcomes • Intensified monitoring may be appropriate for many elderly patients	n/a	Poor

Policy Considerations

At the direction of WA HTA, this review searched for Medicare, Aetna, Regence BCBS, and GroupHealth policies addressing coverage of upper endoscopy for patients with symptoms of GERD. The policies identified are summarized below, with further detail and direct web links to each policy provided in Appendix H.

Medicare

A Medicare NCD for "endoscopy" allows coverage of "endoscopic procedures when reasonable and necessary for the individual patient" (Centers for Medicare and Medicaid Services (CMS) 2012). Medicare contractor LCDs may further define criteria of reasonable and necessary. However, there are no relevant LCDs applicable to Washington or the Northwest Region (CMS Region X).

Aetna

Aetna has issued a clinical policy bulletin (CPB) addressing upper gastrointestinal endoscopy (Aetna 2011). The CPB outlines detailed clinical indications for the use of upper endoscopy in the following categories: high-risk screening, diagnostic, therapeutic, and sequential or periodic surveillance. The policy excludes coverage of upper endoscopy as experimental and investigational in several explicit circumstances. Table 5 highlights clinical indications set forth by the policy that are relevant to this review. Please see Appendix Hfor complete copy of the policy and a full list of indications allowing coverage of upper endoscopy.

Table 5. Aetna Policy Outlining Clinical Indications for Upper Endoscopy

Type of use for upper endoscopy	Clinical indications considered medically necessary
Diagnostic	• Evaluation of upper abdominal symptoms that persist despite an appropriate trial of therapy • Evaluation of upper abdominal symptoms associated with other symptoms or signs suggesting serious organic disease (e.g., anorexia and weight loss) or in persons over 45 years of age

Type of use for upper endoscopy	Clinical indications considered medically necessary

	• Evaluation of dysphagia or odynophagia
	• Evaluation of esophageal reflux symptoms that are persistent or recurrent despite appropriate therapy
	• Evaluation of persistent vomiting of unknown cause
	• Evaluation of GI bleeding
	  ○ For persons with active or recent bleeding
	  ○ For presumed chronic blood loss and for iron deficiency anemia when the clinical situation suggests an upper GI source
	• Evaluation of dyspepsia when any of the following is present
	  ○ Chronic GI bleeding
	  ○ Epigastric mass
	  ○ Iron deficiency anemia
	  ○ Persistent vomiting
	  ○ Progressive difficulty swallowing
	  ○ Progressive unintentional weight loss
	  ○ Suspicious barium meal (upper GI series)
	
	(Note: the above indications are excerpted from the full Aetna policy, provided in Appendix H.)

High-risk screening	• Persons with chronic (5 years or more) gastroesophageal reflux disease (GERD) at risk for Barrett's esophagus. (Note: After a negative screening EGD, further screening EGD is not indicated). • Persons with symptomatic pernicious anemia (e.g., anemia, fatigue, pallor, Red tongue, shortness of breath, as well as tingling and numbness in the hands and feet) to identify prevalent lesions (e.g., carcinoid tumors, gastric cancer). • Persons with cirrhosis and portal hypertension but no prior variceal hemorrhage, especially those with platelet counts less than 140,000/mm^3, or Child's class B or C disease.
Surveillance	• Surveillance of persons with Barrett's esophagus (BE) without dysplasia. For persons with established BE of any length and with no dysplasia, after 2 consecutive examinations within 1 year, an acceptable interval for additional surveillance is every 3 years. • Surveillance of persons with BE and low-grade dysplasia at 6 months. If low-grade dysplasia is confirmed, then surveillance at 12 months and yearly

Type of use for upper endoscopy	Clinical indications considered medically necessary
	thereafter as long as dysplasia persists. • Surveillance of persons with BE and high-grade dysplasia every 3 months for at least 1 year. After 1 year of no cancer detection, the interval of surveillance may be lengthened if there are no dysplastic changes on 2 subsequent endoscopies performed at 3-month intervals. • Surveillance of persons with a severe caustic esophageal injury every 1 to 3 years beginning 15 to 20 years after the injury. • Surveillance of persons with tylosis every 1 to 3 years beginning at 30 years of age. • Surveillance of recurrence of adenomatous polyps in synchronous and metachronous sites at 3- to 5-year intervals. • Surveillance of persons with familial adenomatous polyposis starting around the time of colectomy or after age of 30 years. • Surveillance of persons with hereditary non-polyposis colorectal cancer.
Indications excluded from coverage	• EGD for routine screening • Evaluation of symptoms that are considered functional in origin. (There are exceptions in which an EGD may be done once to rule out organic disease, especially if symptoms are unresponsive to therapy) • Evaluation of metastatic adenocarcinoma of unknown primary site when the results will not alter management • Repeat EGD for persons with a prior normal EGD if symptoms remain unchanged • Routine evaluation of abdominal pain in children (i.e., without other signs and symptoms suggestive of serious organic disease) • Evaluation of radiographical findings of: o Asymptomatic or uncomplicated sliding hiatal hernia o Deformed duodenal bulb when symptoms are absent or respond adequately to ulcer therapy o Uncomplicated duodenal ulcer that has responded to therapy • Surveillance for malignancy in persons with gastric atrophy, pernicious anemia, or prior gastric operations for benign disease (e.g., partial gastrectomy for peptic ulcer disease) • Surveillance of healed benign disease (e.g., esophagitis or duodenal/gastric ulcer) • Surveillance during repeated dilations of benign strictures unless there is a

Type of use for upper endoscopy	Clinical indications considered medically necessary
	change in status • Surveillance of persons with achalasia • Surveillance of persons with previous aerodigestive squamous cell cancer • Surveillance of persons with gastric intestinal metaplasia • Surveillance of persons following adequate sampling or removal of non-dysplastic gastric polyps

GroupHealth
No policies identified addressing upper endoscopy for people with symptoms of GERD.

Regence BCBS Washington
No policies identified addressing upper endoscopy for people with symptoms of GERD.

Overall Summary

Evidence
There are a variety of options for initiating workup and treatment of patients presenting with uninvestigated dyspepsia and/or GERD symptoms. A good quality systematic review (Delaney 2005) and a fair quality prospective cohort study (Madan 2005) show that non-invasive strategies, such as an empiric trial of PPI or *H. pylori* test and treat, are equally as effective as prompt endoscopy for achieving symptom improvement. A 24-hour esophageal pH study might be the gold standard for GERD diagnosis according to the Madan study (2005), but its clinical usefulness is limited by invasiveness, cost, and availability.

There is wide acceptance of the use of “alarm symptoms” such as anemia, dysphagia, and unintentional weight loss to determine patients’ need for prompt endoscopy. Patients with these symptoms are excluded from trials of endoscopy for GERD or dyspepsia, on the grounds that they represent a population with a higher-than-normal risk of malignancy. Clinical guidelines invoke these alarm features as indications to bypass empiric treatment or non-invasive testing and move straight to endoscopy. One good quality meta-analysis (Vakil 2006) and one fair quality prospective case series (Rossi 2002) both agreed that alarm symptoms, as well as clnical opinion, are poor predictors of gastrointestinal malignancy. However, at this time there is no compelling evidence as to what should replace them. Vakil and colleagues (2006) do point out the very low incidence of GI malignancy in Western populations below the age of 55, and note that an age cutoff may be appropriate in formulating a strategy for use of endoscopy.

One meta-analysis that included prespecified subgroup analyses did show that there was a small but statistically significant effect in favor of endscopy for patients aged 50 years and older. Other subgroup analyses based on gender, predominant symptom, and presence of *H.*

pylori showed no difference in the effectiveness of endoscopy between groups. A poor quality retrospective cohort study failed to demonstrate any significant associations between meaningful endoscopic findings and patient demographics (e.g., age, race, or gender) or NSAID use.

Patients with findings of malignancy or other serious pathology on endoscopy will be followed up appropriately. But for those whose endoscopic diagnosis was nothing more serious than esophagitis and/or peptic ulcer disease, is there an indication to perform a follow-up endoscopy? One good quality prospective cohort study (Westbrook 2005) followed patients who had presented initially with dyspepsia for eight to nine years after their index endoscopy. More than half of patients had persistent symptoms, and those who had undergone repeat endoscopy (31%) were neither more nor less likely to be symptomatic than those who had not. The study did not, however, assess the findings of these subsequent endoscopies.

There is very little recent data on the harms of upper endoscopy when performed for dyspepsia and/or GERD. The author of one economic evaluation noted that complications are commonly cardiorespiratory (related to sedation), and for purposes of the model used an incidence of severe harms of 0.02%. We found no studies reporting harms associated with empiric acid-suppressing medication or *H. pylori* test-and-treat.

There have been several studies of varying quality that have attempted to determine the most cost-effective means of managing the uninvestigated patient with dyspepsia. Five good quality economic evaluations, along with one of fair quality and one poor quality study, have identified an *H. pylori* test-and-treat strategy as the most cost-effective option. The one exception is a US study that looked at a hypothetical population of 30 year olds and preferred empiric PPI for this younger age group. Two poor quality RCTs also recommended empiric PPI as a more cost-effective choice than endoscopy. There were no studies that demonstrated prompt endoscopy to be the most cost-effective option.

Guidelines

Four guidelines (one good, two fair, and one poor quality) discuss the role endoscopy in the diagnosis and early management of dyspepsia and GERD. One guideline (AGA 2008) recommends endoscopy to evaluate patients who have not responded to PPI therapy and have suspected GERD symptoms. A fair quality guideline (ASGE 2007a) recommends the use of endoscopy for the screening of Barrett's esophagus as clinical indicated, in patients with recurrent symptoms after endoscopic or surgical antireflux procedures, and/or patients with suspected extra-esophageal manifestations of GERD. One poor quality guideline (ASGE 2006) recommends endoscopy only be conducted in an elderly population when the results will influence clinical management or outcomes, that endoscopy preparation does not differ for geriatric populations, and that intensified monitoring may be appropriate for many elderly patients. The AGA (2008) recommends against routine endoscopy for patient with GERD for

assessment of disease progression, and finds insufficient evidence for routine upper endoscopy to reduce mortality from esophageal cancer.

One fair quality guideline (ASGE 2007b) specifically recommends endoscopy in patients between the age 45 to 55 years who have new onset dyspepsia and those who have alarm features should undergo an endoscopy, or in patients without alarm features for whom there is clinical suspicion of malignancy. The ASGE (2007b) guideline recommends either endoscopy or a short trial of PPI acid suppression for patients who are younger than 50 years old and are *H. pylori* negative.

Policies

This review identified two payers, Medicare and Aetna, with policies addressing coverage of upper endoscopy for patients with symptoms of GERD. Medicare has issued a general NCD for "endoscopy" allowing coverage of "endoscopic procedures when reasonable and necessary for the individual patient" (CMS 2012). There are no LCDs applicable to Washington or the Northwest Region that further define criteria constituting "reasonable and necessary" use of the procedure. Among private payers, Aetna has issued a policy setting forth detailed clinical indications for the use of upper endoscopy in the following categories: high risk screening, diagnostic, therapeutic, and sequential or periodic surveillance. The policy excludes coverage of upper endoscopy as experimental and investigational in several explicit circumstances.

Discussion and Limitations

Upper endoscopy for diagnosis of GERD and other upper gastrointestinal symptoms is a thorny topic, subject to many sources of imprecision and potential bias. First, there is the problem of defining which symptoms are indicative of gastro-esophageal reflux disease, and which are dyspepsia. In a primary care office setting, patients are rarely clear-cut members of one category or the other. Second, there is the question of practice setting. Some studies look only at patients primary care, while others include patients in a specialty referral setting such as an endoscopy center. Depending upon the health care system, patients may or may not be able to self-refer into these specialty centers. Therefore it becomes unclear whether patients in a primary care setting and those in a specialty center are in fact comparable populations.

There is not a consensus on how outcomes should be measured in patients who are treated for dyspepsia or GERD. Several symptom scoring tools exist, some of which are validated. When data are pooled into meta-analyses, these symptom scores are necessarily dichotomized into "cured" versus "not cured," or "improved" versus "not improved." A cost-utility analysis that converts these symptom scores into QALYs is one further step removed from the actual patient experience.

Economic modeling studies and cost-effectiveness analyses in this report came to a consensus around one type of intervention as being generally the most cost-effective (test-and-treat), and initial endoscopy as being less cost-effective. Using incremental cost-effectiveness ratios (ICERs)

allows for some degree of comparison across multiple nations whose health care costs may be defined in radically different ways.

Appendix A. MEDLINE® Search Strategy

Database: Ovid MEDLINE(R) and Ovid OLDMEDLINE(R) <1946 to February Week 1 2012>

Search Strategy:

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1 exp Endoscopy/ (226579)

2 exp Endoscopes/ (19136)

3 1 or 2 (235467)

4 (endoscop$ or gastroscop$ or esophagoscop$ or duodenoscop$).mp. [mp=title, abstract, original title, name of substance word, subject heading word, protocol supplementary concept, rare disease supplementary concept, unique identifier] (153420)

5 3 or 4 (279025)

6 exp Stomach Diseases/di (18998)

7 exp Esophageal Diseases/di (18094)

8 exp Duodenal Diseases/di (8222)

9 exp Upper Gastrointestinal Tract/ (160060)

10 exp diagnosis/ (5821301)

11 di.fs. (1767793)

12 10 or 11 (6464793)

13 9 and 12 (67560)

14 6 or 7 or 8 or 13 (97729)

15 exp "signs and symptoms, digestive"/ (115435)

16 14 and 15 (4556)

17 5 and 16 (1880)

18 (dyspep$ or heartburn$ or ((upset$ or sore$ or ache$ or pain$ or complain$ or symptom$ or bother$) adj5 (stomach$ or esophag$ or belly))).mp. (18154)

19 14 and 18 (4669)

20 5 and 19 (2697)

21 17 or 20 (3626)

22 limit 21 to (english language and yr="2002 -Current") (1432)

23 limit 22 to humans (1416)

24 limit 23 to (controlled clinical trial or meta analysis or randomized controlled trial) (74)

25 limit 23 to systematic reviews (26)

26 exp cohort studies/ (1142513)

27 23 and 26 (506)

28 24 or 25 or 27 (556) **[Effectiveness search results]**

29 exp Postoperative Complications/ (376177)
30 exp Intraoperative Complications/ (32412)
31 29 or 30 (397886)
32 3 and 9 and 31 (1597)
33 exp Gastrointestinal Diseases/ (674951)
34 32 and 33 (993)
35 exp gastroscopy/ae (625)
36 exp esophagoscopy/ae (621)
37 exp duodenoscopy/ae (96)
38 35 or 36 or 37 (1188)
39 34 or 38 (2134)
40 limit 39 to (english language and yr="2002 -Current") (733)
41 limit 40 to humans (711)
42 41 not 28 (670) **[Complications search results]**
43 exp "Costs and Cost Analysis"/ (160841)
44 exp gastroscopy/ (13200)
45 exp esophagoscopy/ (10818)
46 exp duodenoscopy/ (2528)
47 44 or 45 or 46 (24497)
48 exp gastrointestinal diseases/di (112080)
49 15 or 18 (125022)
50 exp Diagnostic Techniques, Digestive System/ (124025)
51 48 or 49 or 50 (320837)
52 43 and 47 and 51 (228)
53 limit 52 to (english language and yr="2002 -Current") (90) **[Cost Effectiveness search results]**

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Appendix B. Excluded Studies

Studies Related to Effectiveness

Study design not relevant

Abe, Y., Iijima, K., Ohara, S., Koike, T., Ara, N., Uno, K., . . . Shimosegawa, T. (2011). A japanese case series of 12 patients with esophageal eosinophilia. *Journal of Gastroenterology, 46*(1), 25-30.

Basseri, B., Conklin, J. L., Mertens, R. B., Lo, S. K., Bellack, G. S., & Shaye, O. A. (2009). Heterotopic gastric mucosa (inlet patch) in a patient with laryngopharyngeal reflux (LPR) and laryngeal carcinoma: A case report and review of literature. *Diseases of the Esophagus, 22*(4), E1-5.

Borum, M. L., Igiehon, E., & Shafa, S. (2009). Sexual abuse history in patients. *Gastroenterology Nursing, 32*(3), 222-223.

Bretagne, J. F., Rey, J. F., Caekaert, A., & Barthelemy, P. (2005). Routine management of gastro-oesophageal reflux disease by gastroenterologists in france: A prospective observational study. *Digestive & Liver Disease, 37*(8), 566-570.

El Faleh, I., Lutz, N., Osterheld, M. C., Reinberg, O., & Nydegger, A. (2009). Gastric outlet obstruction by brunner's gland hyperplasia in an 8-year-old child. *Journal of Pediatric Surgery, 44*(4), E21-4.

Hori, K., Kim, Y., Sakurai, J., Watari, J., Tomita, T., Oshima, T., . . . Miwa, H. (2010). Non-erosive reflux disease rather than cervical inlet patch involves globus. *Journal of Gastroenterology, 45*(11), 1138-1145.

Khurram, M., Khaar, H. T., Hasan, Z., Umar, M., Javed, S., Asghar, T., . . . Pervaiz, A. (2003). A 12 years audit of upper gastrointestinal endoscopic procedures. *Jcpsp, Journal of the College of Physicians & Surgeons - Pakistan, 13*(6), 321-324.

Lacy, B. E., Weiser, K., Chertoff, J., Fass, R., Pandolfino, J. E., Richter, J. E., . . . Vaezi, M. F. (2010). The diagnosis of gastroesophageal reflux disease. *American Journal of Medicine, 123*(7), 583-592.

Lin, A. W., Eng, M., & Robbins, D. (2009). A very unusual appearance of a rare endoscopic finding: Esophageal hematoma. *Endoscopy, 41*(Suppl 2), E40.

Moayyedi, P., Talley, N. J., Fennerty, M. B., & Vakil, N. (2006). Can the clinical history distinguish between organic and functional dyspepsia? *JAMA, 295*(13), 1566-1576.

Modlin, I. M., Hunt, R. H., Malfertheiner, P., Moayyedi, P., Quigley, E. M., Tytgat, G. N., . . . Vevey NERD Consensus, G. (2009). Diagnosis and management of non-erosive reflux disease--the vevey NERD consensus group. *Digestion, 80*(2), 74-88.

Rolff, H. C., Simonsen, L. R., & Rosenberg, J. (2011). Clinical findings confirm national guidelines regarding primary gastroscopy for upper gastrointestinal symptoms. *Danish Medical Bulletin, 58*(5), A4363.

Sayilir, A., Kurt, M., Onal, I. K., Beyazit, Y., & Suvak, B. (2011). An unusual complication of peptic ulcer disease: Double pylorus. *Gastroenterology Nursing, 34*(5), 401-402. doi:http://dx.doi.org/10.1097/SGA.0b013e31822c69f9

Schelling, M., Hurlimann, R., & Uhlmann, F. (2009). Electronic clinical challenges and images in GI. image 3. granular cell tumor or abrikossoff tumor of the esophagus. *Gastroenterology, 136*(7), e7-8.

Subasinghe, D., & Samarasekera, D. N. (2010). Delay in the diagnosis of esophageal carcinoma: Experience of a single unit from a developing country. *Indian Journal of Cancer, 47*(2), 151-155.

Uko, V., Atay, O., Mahajan, L., Kay, M., Hupertz, V., & Wyllie, R. (2009). Endoscopic deployment of the wireless capsule using a capsule delivery device in pediatric patients: A case series. *Endoscopy, 41*(4), 380-382.

Venkatesh, K., Cohen, M., Akobeng, A., Ashok, D., Abou-Taleb, A., Evans, C., . . . Thomson, M. (2009). Diagnosis and management of the first reported case of esophageal, gastric, and small-bowel heterotopia in the colon, using confocal laser endomicroscopy. *Endoscopy, 41*(Suppl 2), E58.

Wu, J. C., Cheung, C. M., Wong, V. W., & Sung, J. J. (2007). Distinct clinical characteristics between patients with nonerosive reflux disease and those with reflux esophagitis. *Clinical Gastroenterology & Hepatology, 5*(6), 690-695.

Yuan, Y., & Hunt, R. H. (2009). Evolving issues in the management of reflux disease? *Current Opinion in Gastroenterology, 25*(4), 342-351.

Non-English Language

Bajbouj, M., Reichenberger, J., Neu, B., Prinz, C., Schmid, R. M., Rosch, T., & Meining, A. (2005). A prospective multicenter clinical and endoscopic follow-up study of patients with gastroesophageal reflux disease. *Zeitschrift Fur Gastroenterologie, 43*(12), 1303-1307.

Population not relevant

Abbas, A. E., Deschamps, C., Cassivi, S. D., Allen, M. S., Nichols, F. C.,3rd, Miller, D. L., & Pairolero, P. C. (2004). Barrett's esophagus: The role of laparoscopic fundoplication. *Annals of Thoracic Surgery, 77*(2), 393-396.

Aceves, S. S., Newbury, R. O., Dohil, M. A., Bastian, J. F., & Dohil, R. (2009). A symptom scoring tool for identifying pediatric patients with eosinophilic esophagitis and correlating symptoms with inflammation. *Annals of Allergy, Asthma, & Immunology, 103*(5), 401-406.

Ajisaka, H., & Miwa, K. (2005). Clinical study of gastric cancer patients with complaint of hematemesis. *International Surgery, 90*(4), 198-201.

Akbayir, N., Alkim, C., Erdem, L., Sokmen, H. M., Sungun, A., Basak, T., . . . Mungan, Z. (2004). Heterotopic gastric mucosa in the cervical esophagus (inlet patch): Endoscopic prevalence, histological and clinical characteristics. *Journal of Gastroenterology & Hepatology, 19*(8), 891-896.

Akcam, M., Ozdem, S., Yilmaz, A., Gultekin, M., & Artan, R. (2007). Serum ferritin, vitamin B(12), folate, and zinc levels in children infected with helicobacter pylori. *Digestive Diseases & Sciences, 52*(2), 405-410.

Al-Asoom, L., Al-Rubaish, A. M., El-Munshid, H. A., Al-Nafaie, A. N., Bukharie, H. A., & Abdulrahman, I. S. (2003). Gastroesophageal reflux in bronchial asthma patients. A clinical note. *Saudi Medical Journal, 24*(12), 1364-1369.

Allison, J. E., Hurley, L. B., Hiatt, R. A., Levin, T. R., Ackerson, L. M., & Lieu, T. A. (2003). A randomized controlled trial of test-and-treat strategy for helicobacter pylori: Clinical outcomes and health care costs in a managed care population receiving long-term acid suppression therapy for physician-diagnosed peptic ulcer disease. *Archives of Internal Medicine, 163*(10), 1165-1171.

Arain, M. A., Peters, J. H., Tamhankar, A. P., Portale, G., Almogy, G., DeMeester, S. R., . . . DeMeester, T. R. (2004). Preoperative lower esophageal sphincter pressure affects outcome of laparoscopic esophageal myotomy for achalasia. *Journal of Gastrointestinal Surgery, 8*(3), 328-334.

Ashorn, M., Ruuska, T., Karikoski, R., & Laippala, P. (2002). The natural course of gastroesophageal reflux disease in children. *Scandinavian Journal of Gastroenterology, 37*(6), 638-641.

Asl, M. K., & Nasri, H. (2009). Prevalence of helicobacter pylori infection in maintenance hemodialysis patients with non-ulcer dyspepsia. *Saudi Journal of Kidney Diseases & Transplantation, 20*(2), 223-226.

Atkinson, M., Das, A., Faulx, A., Kinnard, M., Falck-Ytter, Y., & Chak, A. (2008). Ultrathin esophagoscopy in screening for barrett's esophagus at a veterans administration hospital: Easy access does not lead to referrals. *American Journal of Gastroenterology, 103*(1), 92-97.

Azumi, T., Adachi, K., Arima, N., Tanaka, S., Yagi, J., Koshino, K., . . . Kinoshita, Y. (2008). Five-year follow-up study of patients with reflux symptoms and reflux esophagitis in annual medical check-up field. *Internal Medicine, 47*(8), 691-696.

Bahu Mda, G., da Silveira, T. R., Maguilnick, I., & Ulbrich-Kulczynski, J. (2003). Endoscopic nodular gastritis: An endoscopic indicator of high-grade bacterial colonization and severe gastritis in children with helicobacter pylori. *Journal of Pediatric Gastroenterology & Nutrition, 36*(2), 217-222.

Banic, M., Sutlic, Z., Biocina, B., Kujundzic, M., Fabijanic, D., Ljubicic, N., . . . Rotkvic, I. (2005). Peptic ulcer disease in dyspeptic patients with ischemic heart disease: Search and treat?. *Zeitschrift Fur Gastroenterologie, 43*(6), 581-586.

Bannwarth, B., Dorval, E., Caekaert, A., & Barthelemy, P. (2002). Influence of helicobacter pylori eradication therapy on the occurrence of gastrointestinal events in patients treated with conventional nonsteroidal antiinflammatory drugs combined with omeprazole. *Journal of Rheumatology, 29*(9), 1975-1980.

Bayrakci, B., Kasap, E., Kitapcioglu, G., & Bor, S. (2008). Low prevalence of erosive esophagitis and barrett esophagus in a tertiary referral center in turkey. *Turkish Journal of Gastroenterology, 19*(3), 145-151.

Betalli, P., Falchetti, D., Giuliani, S., Pane, A., Dall'Oglio, L., de Angelis, G. L., . . . Caustic Ingestion Italian Study, G. (2008). Caustic ingestion in children: Is endoscopy always indicated? the results of an italian multicenter observational study. *Gastrointestinal Endoscopy, 68*(3), 434-439.

Brandt, M. G., Darling, G. E., & Miller, L. (2004). Symptoms, acid exposure and motility in patients with barrett's esophagus. *Canadian Journal of Surgery, 47*(1), 47-51.

Burstow, M., Kelly, T., Panchani, S., Khan, I. M., Meek, D., Memon, B., & Memon, M. A. (2009). Outcome of palliative esophageal stenting for malignant dysphagia: A retrospective analysis. *Diseases of the Esophagus, 22*(6), 519-525.

Calleja, J. L., Suarez, M., De Tejada, A. H., Navarro, A., & Pantogerd, G. (2005). Helicobacter pylori infection in patients with erosive esophagitis is associated with rapid heartburn relief and lack of relapse after treatment with pantoprazole. *Digestive Diseases & Sciences, 50*(3), 432-439.

Carrodeguas, L., Szomstein, S., Soto, F., Whipple, O., Simpfendorfer, C., Gonzalvo, J. P., . . . Rosenthal, R. (2005). Management of gastrogastric fistulas after divided roux-en-Y gastric bypass surgery for morbid obesity: Analysis of 1,292 consecutive patients and review of literature. *Surgery for Obesity & Related Diseases, 1*(5), 467-474.

Casburn-Jones, A. C., Murray, L. S., Gillen, D., & McColl, K. E. (2006). Endoscopy has minimal impact on mortality from upper gastrointestinal cancer in patients older than 55 years with uncomplicated dyspepsia. *European Journal of Gastroenterology & Hepatology, 18*(6), 645-648.

Castilloux, J., Bouron-Dal Soglio, D., & Faure, C. (2010). Endoscopic assessment of children with esophageal atresia: Lack of relationship of esophagitis and esophageal metaplasia to symptomatology. *Canadian Journal of Gastroenterology, 24*(5), 312-316.

Ching, Y. A., Modi, B. P., Jaksic, T., & Duggan, C. (2008). High diagnostic yield of gastrointestinal endoscopy in children with intestinal failure. *Journal of Pediatric Surgery, 43*(5), 906-910.

Csendes, A., Smok, G., Quiroz, J., Burdiles, P., Rojas, J., Castro, C., & Henriquez, A. (2002). Clinical, endoscopic, and functional studies in 408 patients with barrett's esophagus, compared to 174 cases of intestinal metaplasia of the cardia. *American Journal of Gastroenterology, 97*(3), 554-560.

Cuomo, A., Romano, M., Rocco, A., Budillon, G., Del Vecchio Blanco, C., & Nardone, G. (2003). Reflux oesophagitis in adult coeliac disease: Beneficial effect of a gluten free diet. *Gut, 52*(4), 514-517.

Das, B. K., Kakkar, S., Dixit, V. K., Kumar, M., Nath, G., & Mishra, O. P. (2003). Helicobacter pylori infection and recurrent abdominal pain in children. *Journal of Tropical Pediatrics, 49*(4), 250-252.

Dehghani, S. M., Haghighat, M., Imanieh, M. H., & Tabebordbar, M. R. (2009). Upper gastrointestinal bleeding in children in southern iran. *Indian Journal of Pediatrics, 76*(6), 635-638.

Dietz, J., Meurer, L., Maffazzoni, D. R., Furtado, A. D., & Prolla, J. C. (2003). Intestinal metaplasia in the distal esophagus and correlation with symptoms of gastroesophageal reflux disease. *Diseases of the Esophagus, 16*(1), 29-32.

Durham, M. M., Gow, K. W., Shehata, B. M., Katzenstein, H. M., Lorenzo, R. L., & Ricketts, R. R. (2004). Gastrointestinal stromal tumors arising from the stomach: A report of three children. *Journal of Pediatric Surgery, 39*(10), 1495-1499.

El-Serag, H. B., Gilger, M., Carter, J., Genta, R. M., & Rabeneck, L. (2004). Childhood GERD is a risk factor for GERD in adolescents and young adults. *American Journal of Gastroenterology, 99*(5), 806-812.

El-Serag, H. B., Pilgrim, P., Tatevian, N., Medrano, M., Kitagawa, S., & Gilger, M. (2008). Prevalence and histological features of the gastric cardia-type mucosa in children. *Digestive Diseases & Sciences, 53*(7), 1792-1796.

Eroglu, A., Can Kurkcuogu, I., Karaoganogu, N., Tekinbas, C., Yimaz, O., & Basog, M. (2004). Esophageal perforation: The importance of early diagnosis and primary repair. *Diseases of the Esophagus, 17*(1), 91-94.

Fabbian, F., Catalano, C., Bordin, V., Balbi, T., & Di Landro, D. (2002). Esophagogastroduodenoscopy in chronic hemodialysis patients: 2-year clinical experience in a renal unit. *Clinical Nephrology, 58*(1), 54-59.

Falkenback, D., Oberg, S., Johnsson, F., & Johansson, J. (2009). Is the course of gastroesophageal reflux disease progressive? A 21-year follow-up. *Scandinavian Journal of Gastroenterology, 44*(11), 1277-1287.

Giangreco, E., D'agate, C., Barbera, C., Puzzo, L., Aprile, G., Naso, P., . . . Russo, A. (2008). Prevalence of celiac disease in adult patients with refractory functional dyspepsia: Value of routine duodenal biopsy. *World Journal of Gastroenterology, 14*(45), 6948-6953.

Gilger, M. A., El-Serag, H. B., Gold, B. D., Dietrich, C. L., Tsou, V., McDuffie, A., & Shub, M. D. (2008). Prevalence of endoscopic findings of erosive esophagitis in children: A population-based study. *Journal of Pediatric Gastroenterology & Nutrition, 47*(2), 141-146.

Guariso, G., Conte, S., Galeazzi, F., Vettorato, M. G., Martini, G., & Zulian, F. (2007). Esophageal involvement in juvenile localized scleroderma: A pilot study. *Clinical & Experimental Rheumatology, 25*(5), 786-789.

Gunasekaran, T., Gupta, S., Gremse, D., Karol, M., Pan, W. J., Chiu, Y. L., . . . Fitzgerald, J. (2002). Lansoprazole in adolescents with gastroesophageal reflux disease: Pharmacokinetics, pharmacodynamics, symptom relief efficacy, and tolerability. *Journal of Pediatric Gastroenterology & Nutrition, 35*(Suppl 4), S327-35.

Gururatsakul, M., Holloway, R. H., Talley, N. J., & Holtmann, G. J. (2010). Association between clinical manifestations of complicated and uncomplicated peptic ulcer and visceral sensory dysfunction. *Journal of Gastroenterology & Hepatology, 25*(6), 1162-1169.

Ho, K. Y., Gwee, K. A., Khor, C. J., Selamat, D. S., Wai, C. T., & Yeoh, K. G. (2005). Empirical treatment for the management of patients presenting with uninvestigated reflux symptoms: A prospective study in an Asian primary care population. *Alimentary Pharmacology & Therapeutics, 21*(11), 1313-1320.

Holtmann, G., Gschossmann, J., Buenger, L., Gerken, G., & Talley, N. J. (2002). Do changes in visceral sensory function determine the development of dyspepsia during treatment with aspirin?. *Gastroenterology, 123*(5), 1451-1458.

Hsu, Y. C., Chung, C. S., Tseng, C. H., Lin, T. L., Liou, J. M., Wu, M. S., . . . Wang, H. P. (2009). Delayed endoscopy as a risk factor for in-hospital mortality in cirrhotic patients with acute variceal hemorrhage. *Journal of Gastroenterology & Hepatology, 24*(7), 1294-1299.

Huang, W. H., Wang, H. H., Wu, W. W., Lai, H. C., Hsu, C. H., & Cheng, K. S. (2004). Helicobacter pylori infection in patients with ulcer recurrence after partial gastrectomy. *Hepato-Gastroenterology, 51*(59), 1551-1553.

Ishii, M., Manabe, N., Kusunoki, H., Kamada, T., Sato, M., Imamura, H., . . . Haruma, K. (2008). Real-time evaluation of dyspeptic symptoms and gastric motility induced by duodenal acidification using noninvasive transnasal endoscopy. *Journal of Gastroenterology, 43*(12), 935-941.

Islam, S., Teitelbaum, D. H., Buntain, W. L., & Hirschl, R. B. (2004). Esophagogastric separation for failed fundoplication in neurologically impaired children. *Journal of Pediatric Surgery, 39*(3), 287-291.

Johnson, D. A., Ganz, R., Aisenberg, J., Cohen, L. B., Deviere, J., Foley, T. R., . . . Lehman, G. A. (2003). Endoscopic implantation of enteryx for treatment of GERD: 12-month results of a prospective, multicenter trial. *American Journal of Gastroenterology, 98*(9), 1921-1930.

Kato, S., Fujimura, S., Kimura, K., Nishio, T., Hamada, S., Minoura, T., & Oda, M. (2006). Non-helicobacter bacterial flora rarely develops in the gastric mucosal layer of children. *Digestive Diseases & Sciences, 51*(4), 641-646.

Korenkov, M., Kohler, L., Yucel, N., Grass, G., Sauerland, S., Lempa, M., & Troidl, H. (2002). Esophageal motility and reflux symptoms before and after bariatric surgery. *Obesity Surgery, 12*(1), 72-76.

Kiesslich, R., Kanzler, S., Vieth, M., Moehler, M., Neidig, J., Thanka Nadar, B. J., . . . Galle, P. R. (2004). Minimal change esophagitis: Prospective comparison of endoscopic and histological markers between patients with non-erosive reflux disease and normal controls using magnifying endoscopy. *Digestive Diseases, 22*(2), 221-227.

Kouklakis, G., Moschos, J., Kountouras, J., Mpoumponaris, A., Molyvas, E., & Minopoulos, G. (2005). Relationship between obesity and gastroesophageal reflux disease as recorded by 3-hour esophageal pH monitoring. *Romanian Journal of Gastroenterology, 14*(2), 117-121.

Kulig, M., Nocon, M., Vieth, M., Leodolter, A., Jaspersen, D., Labenz, J., . . . Willich, S. N. (2004). Risk factors of gastroesophageal reflux disease: Methodology and first epidemiological results of the ProGERD study. *Journal of Clinical Epidemiology, 57*(6), 580-589.

Kuo, C. J., Lin, C. H., Liu, N. J., Wu, R. C., Tang, J. H., & Cheng, C. L. (2010). Frequency and risk factors for barrett's esophagus in taiwanese patients: A prospective study in a tertiary referral center. *Digestive Diseases & Sciences, 55*(5), 1337-1343.

Labenz, J., Jaspersen, D., Kulig, M., Leodolter, A., Lind, T., Meyer-Sabellek, W., . . . Malfertheiner, P. (2004). Risk factors for erosive esophagitis: A multivariate analysis based on the ProGERD study initiative. *American Journal of Gastroenterology, 99*(9), 1652-1656.

Lahcene, M., Oumnia, N., Matougui, N., Boudjella, M., Tebaibia, A., & Touchene, B. (2009). Esophageal dysmotility in scleroderma: A prospective study of 183 cases. *Gastroenterologie Clinique Et Biologique, 33*(6-7), 466-469.

Lee, I. S., Choi, S. C., Shim, K. N., Jee, S. R., Huh, K. C., Lee, J. H., . . . Park, H. J. (2010). Prevalence of barrett's esophagus remains low in the korean population: Nationwide cross-sectional prospective multicenter study. *Digestive Diseases & Sciences, 55*(7), 1932-1939.

Liou, J. M., Lin, J. T., Wang, H. P., Huang, S. P., Lee, Y. C., Shun, C. T., . . . Wu, M. S. (2005). The optimal age threshold for screening upper endoscopy for uninvestigated dyspepsia in Taiwan, an area with a higher prevalence of gastric cancer in young adults. *Gastrointestinal Endoscopy, 61*(7), 819-825.

Liu, J. J., Di Sena, V., Ookubo, R., Carr-Locke, D. L., & Saltzman, J. R. (2006). Endoscopic treatment of gastroesophageal reflux disease: Effect of gender on clinical outcome. *Scandinavian Journal of Gastroenterology, 41*(2), 144-148.

Lord, R. V., Kaminski, A., Oberg, S., Bowrey, D. J., Hagen, J. A., DeMeester, S. R., . . . DeMeester, T. R. (2002). Absence of gastroesophageal reflux disease in a majority of patients taking acid suppression medications after nissen fundoplication. *Journal of Gastrointestinal Surgery, 6*(1), 3-9.

Lu, C. L., Chang, S. S., Wang, S. S., Chang, F. Y., & Lee, S. D. (2004). Silent peptic ulcer disease: Frequency, factors leading to "silence," and implications regarding the pathogenesis of visceral symptoms. *Gastrointestinal Endoscopy, 60*(1), 34-38.

Maaroos, H. I., Andreson, H., Loivukene, K., Hutt, P., Kolk, H., Kull, I., . . . Mikelsaar, M. (2004). The diagnostic value of endoscopy and helicobacter pylori tests for peptic ulcer patients in late post-treatment setting. *BMC Gastroenterology, 4*, 27.

Malmstrom, K., Lohi, J., Lindahl, H., Pelkonen, A., Kajosaari, M., Sarna, S., . . . Makela, M. J. (2008). Longitudinal follow-up of bronchial inflammation, respiratory symptoms, and pulmonary function in adolescents after repair of esophageal atresia with tracheoesophageal fistula. *Journal of Pediatrics, 153*(3), 396-401.

Mandell, D. L., Kay, D. J., Dohar, J. E., & Yellon, R. F. (2004). Lack of association between esophageal biopsy, bronchoalveolar lavage, and endoscopy findings in hoarse children. *Archives of Otolaryngology -- Head & Neck Surgery, 130*(11), 1293-1297.

Manes, G., Pieramico, O., Uomo, G., Mosca, S., de Nucci, C., & Balzano, A. (2003). Relationship of sliding hiatus hernia to gastroesophageal reflux disease: A possible role for helicobacter pylori infection?. *Digestive Diseases & Sciences, 48*(2), 303-307.

Marano, B. J.,Jr. (2005). Endoscopy after roux-en-Y gastric bypass: A community hospital experience. *Obesity Surgery, 15*(3), 342-345.

Matos, R. T., Honorio, R. S., Caldini, E. G., Hashimoto, C. L., Ferreira, M. A., & Navarro-Rodriguez, T. (2009). Variation of the intercellular space in the esophageal epithelium in response to hydrochloridric acid infusion in patients with erosive esophagitis. *Clinics (Sao Paulo, Brazil), 64*(7), 669-674.

Mazzoleni, L. E., Sander, G. B., Ott, E. A., Barros, S. G., Francesconi, C. F., Polanczyk, C. A., . . . Prolla, J. C. (2006). Clinical outcomes of eradication of helicobacter pylori in nonulcer dyspepsia in a population with a high prevalence of infection: Results of a 12-month randomized, double blind, placebo-controlled study. *Digestive Diseases & Sciences, 51*(1), 89-98.

McColl, K. E., Murray, L. S., Gillen, D., Walker, A., Wirz, A., Fletcher, J., . . . Dickson, A. (2002). Randomised trial of endoscopy with testing for helicobacter pylori compared with non-invasive H pylori testing alone in the management of dyspepsia. *BMJ, 324*(7344), 999-1002.

McNamara, D., Buckley, M., Crotty, P., Hall, W., O'Sullivan, M., & O'Morain, C. (2002). Carditis: All helicobacter pylori or is there a role for gastro-oesophageal reflux?. *Scandinavian Journal of Gastroenterology, 37*(7), 772-777.

Miyamoto, M., Haruma, K., Yoshihara, M., Hiyama, T., Sumioka, M., Nishisaka, T., . . . Chayama, K. (2003). Nodular gastritis in adults is caused by helicobacter pylori infection. *Digestive Diseases & Sciences, 48*(5), 968-975.

Molina, E. J., Short, S., Monteiro, G., Gaughan, J. P., & Macha, M. (2009). Symptomatic gastroesophageal reflux disease after lung transplantation. *General Thoracic & Cardiovascular Surgery, 57*(12), 647-653.

Muller, S., Puhl, S., Vieth, M., & Stolte, M. (2007). Analysis of symptoms and endoscopic findings in 117 patients with histological diagnoses of eosinophilic esophagitis. *Endoscopy, 39*(4), 339-344.

Ndububa, D. A., Agbakwuru, E. A., Olasode, B. J., Aladegbaiye, A. O., Adekanle, O., & Arigbabu, A. O. (2007). Correlation between endoscopic suspicion of gastric cancer and histology in nigerian patients with dyspepsia. *Tropical Gastroenterology, 28*(2), 69-71.

Niv, Y., Battler, A., Abuksis, G., Gal, E., Sapoznikov, B., & Vilkin, A. (2005). Endoscopy in asymptomatic minidose aspirin consumers. *Digestive Diseases & Sciences, 50*(1), 78-80.

Odemis, B., Cicek, B., Zengin, N. I., Arhan, M., Kacar, S., Cengiz, C., & Yuksel, O. (2009). Barrett's esophagus and endoscopically assessed esophagogastric junction integrity in 1000 consecutive turkish patients undergoing endoscopy: A prospective study. *Diseases of the Esophagus, 22*(8), 649-655.

Okello, T. R. (2006). Upper gastrointestinal endoscopic findings in adolescents at lacor hospital, uganda. *African Health Sciences, 6*(1), 39-42.

O'Riordan, J. M., Byrne, P. J., Ravi, N., Keeling, P. W., & Reynolds, J. V. (2004). Long-term clinical and pathologic response of barrett's esophagus after antireflux surgery. *American Journal of Surgery, 188*(1), 27-33.

Orlando, R. C., Monyak, J. T., & Silberg, D. G. (2009). Predictors of heartburn resolution and erosive esophagitis in patients with GERD. *Current Medical Research & Opinion, 25*(9), 2091-2102.

Pashankar, D. S., Bishop, W. P., & Mitros, F. A. (2002). Chemical gastropathy: A distinct histopathologic entity in children. *Journal of Pediatric Gastroenterology & Nutrition, 35*(5), 653-657.

Perez, R. A., & Early, D. S. (2002). Endoscopy in patients receiving radiation therapy to the thorax. *Digestive Diseases & Sciences, 47*(1), 79-83.

Pleskow, D., Rothstein, R., Lo, S., Hawes, R., Kozarek, R., Haber, G., . . . Lembo, A. (2004). Endoscopic full-thickness plication for the treatment of GERD: A multicenter trial. *Gastrointestinal Endoscopy, 59*(2), 163-171.

Poddar, U., Thapa, B. R., & Singh, K. (2006). Clinical features of celiac disease in indian children: Are they different from the west?. *Journal of Pediatric Gastroenterology & Nutrition, 43*(3), 313-317.

Poelmans, J., Tack, J., & Feenstra, L. (2002). Prospective study on the incidence of chronic ear complaints related to gastroesophageal reflux and on the outcome of antireflux therapy. *Annals of Otology, Rhinology & Laryngology, 111*(10), 933-938.

Ponce, M., Ortiz, V., Juan, M., Garrigues, V., Castellanos, C., & Ponce, J. (2003). Gastroesophageal reflux, quality of life, and satisfaction in patients with achalasia treated with open cardiomyotomy and partial fundoplication. *American Journal of Surgery, 185*(6), 560-564.

Qureshi, N. A., Hallissey, M. T., & Fielding, J. W. (2007). Outcome of index upper gastrointestinal endoscopy in patients presenting with dysphagia in a tertiary care hospital-A 10 years review. *BMC Gastroenterology, 7*, 43.

Reichel, O., & Issing, W. J. (2007). Should patients with pH-documented laryngopharyngeal reflux routinely undergo oesophagogastroduodenoscopy? A retrospective analysis. *Journal of Laryngology & Otology, 121*(12), 1165-1169.

Rezailashkajani, M., Roshandel, D., Shafaee, S., & Zali, M. R. (2007). High prevalence of reflux oesophagitis among upper endoscopies of Iranian patients. *European Journal of Gastroenterology & Hepatology, 19*(6), 499-506.

Salem, S. B., Kushner, Y., Marcus, V., Mayrand, S., Fallone, C. A., & Barkun, A. N. (2009). The potential impact of contemporary developments in the management of patients with gastroesophageal reflux disease undergoing an initial gastroscopy. *Canadian Journal of Gastroenterology, 23*(2), 99-104.

Shalaby, R. Y., Soliman, S. M., Fawy, M., & Samaha, A. (2005). Laparoscopic management of meckel's diverticulum in children. *Journal of Pediatric Surgery, 40*(3), 562-567.

Sharma, K. K., Ranka, P., Goyal, P., & Dabi, D. R. (2008). Gastric outlet obstruction in children: An overview with report of jodhpur disease and sharma's classification. *Journal of Pediatric Surgery, 43*(10), 1891-1897.

Shibuya, S., Fukudo, S., Shineha, R., Miyazaki, S., Miyata, G., Sugawara, K., . . . Satomi, S. (2003). High incidence of reflux esophagitis observed by routine endoscopic examination after gastric pull-up esophagectomy. *World Journal of Surgery, 27*(5), 580-583.

Shiota, S., Murakami, K., Takayama, A., Yasaka, S., Okimoto, T., Yoshiiwa, A., . . . Fujioka, T. (2009). Evaluation of helicobacter pylori status and endoscopic findings among new outpatients with dyspepsia in japan. *Journal of Gastroenterology, 44*(9), 930-934.

Sipponen, P., Vauhkonen, M., Helske, T., Kaariainen, I., & Harkonen, M. (2005). Low circulating levels of gastrin-17 in patients with barrett's esophagus. *World Journal of Gastroenterology, 11*(38), 5988-5992.

Sistonen, S. J., Koivusalo, A., Nieminen, U., Lindahl, H., Lohi, J., Kero, M., . . . Pakarinen, M. P. (2010). Esophageal morbidity and function in adults with repaired esophageal atresia with tracheoesophageal fistula: A population-based long-term follow-up. *Annals of Surgery, 251*(6), 1167-1173.

Soylu, A., Dolapcioglu, C., Dolay, K., Ciltas, A., Yasar, N., Kalayci, M., . . . Sever, N. (2008). Endoscopic and histopathological evaluation of acute gastric injury in high-dose acetaminophen and nonsteroidal anti-inflammatory drug ingestion with suicidal intent. *World Journal of Gastroenterology, 14*(43), 6704-6710.

Soylu, O. B., & Ozturk, Y. (2008). Helicobacter pylori infection: Effect on malnutrition and growth failure in dyspeptic children. *European Journal of Pediatrics, 167*(5), 557-562.

Stoltey, J., Reeba, H., Ullah, N., Sabhaie, P., & Gerson, L. (2007). Does barrett's oesophagus develop over time in patients with chronic gastro-oesophageal reflux disease?. *Alimentary Pharmacology & Therapeutics, 25*(1), 83-91.

Sugimoto, M., Nishino, M., Kodaira, C., Yamade, M., Ikuma, M., Tanaka, T., . . . Furuta, T. (2010). Esophageal mucosal injury with low-dose aspirin and its prevention by rabeprazole. *Journal of Clinical Pharmacology, 50*(3), 320-330.

Switzer-Taylor, V., Schlup, M., Lubcke, R., Livingstone, V., & Schultz, M. (2008). Barrett's esophagus: A retrospective analysis of 13 years surveillance. *Journal of Gastroenterology & Hepatology, 23*(9), 1362-1367.

Sykora, J., Malan, A., Zahlava, J., Varvarska, J., Stozicky, F., Siala, K., & Schwarz, J. (2004). Gastric emptying of solids in children with H. pylori-positive and H. pylori-negative non-ulcer dyspepsia. *Journal of Pediatric Gastroenterology & Nutrition, 39*(3), 246-252.

Tack, J., Koek, G., Demedts, I., Sifrim, D., & Janssens, J. (2004). Gastroesophageal reflux disease poorly responsive to single-dose proton pump inhibitors in patients without barrett's esophagus: Acid reflux, bile reflux, or both?. *American Journal of Gastroenterology, 99*(6), 981-988.

Thakkar, K., Boatright, R. O., Gilger, M. A., & El-Serag, H. B. (2010). Gastroesophageal reflux and asthma in children: A systematic review. *Pediatrics, 125*(4), e925-30.

Tori, A. J., Carroll, A. E., & Gupta, S. K. (2007). Disaccharidase activity in infants and comparison based on symptoms and histological changes. *Journal of Pediatric Gastroenterology & Nutrition, 45*(2), 194-198.

Tovey, F. I., Hobsley, M., Kaushik, S. P., Pandey, R., Kurian, G., Singh, K., . . . Jehangir, E. (2004). Duodenal gastric metaplasia and helicobacter pylori infection in high and low duodenal ulcer-prevalent areas in india. *Journal of Gastroenterology & Hepatology, 19*(5), 497-505.

Uemura, N., Okamoto, S., & Yamamoto, S. (2002). H. pylori infection and the development of gastric cancer. *Keio Journal of Medicine, 51*(Suppl 2), 63-68.

Ullmann, N., Sacco, O., Gandullia, P., Silvestri, M., Pistorio, A., Barabino, A., . . . Rossi, G. A. (2010). Usefulness and safety of double endoscopy in children with gastroesophageal reflux and respiratory symptoms. *Respiratory Medicine, 104*(4), 593-599.

Vandenplas, Y., Badriul, H., Verghote, M., Hauser, B., & Kaufman, L. (2004). Oesophageal pH monitoring and reflux oesophagitis in irritable infants. *European Journal of Pediatrics, 163*(6), 300-304.

Vanhemmens, S., Wellens, W., & Tack, J. (2005). Gastroesophageal reflux in patients with laryngeal disorders. *B-ENT, 1*(3), 117-123.

Varadarajulu, S., Eloubeidi, M. A., Patel, R. S., Mulcahy, H. E., Barkun, A., Jowell, P., . . . Cotton, P. B. (2005). The yield and the predictors of esophageal pathology when upper endoscopy is used for the initial evaluation of dysphagia. *Gastrointestinal Endoscopy, 61*(7), 804-808.

Vavricka, S. R., Storck, C. A., Wildi, S. M., Tutuian, R., Wiegand, N., Rousson, V., . . . Fried, M. (2007). Limited diagnostic value of laryngopharyngeal lesions in patients with gastroesophageal reflux during routine upper gastrointestinal endoscopy. *American Journal of Gastroenterology, 102*(4), 716-722.

Vela, M. F., Richter, J. E., Wachsberger, D., Connor, J., & Rice, T. W. (2004). Complexities of managing achalasia at a tertiary referral center: Use of pneumatic dilatation, heller myotomy, and botulinum toxin injection. *American Journal of Gastroenterology, 99*(6), 1029-1036.

Vilaichone, R. K., Mahachai, V., Tumwasorn, S., Nunthapisud, P., Wisedopas, N., & Kullavanijaya, P. (2002). Duodenal helicobacter pylori associated duodenal ulcer depend on gastric helicobacter pylori status. *Journal of the Medical Association of Thailand, 85*(Suppl 1), S97-102.

Wang, K. K., Lutzke, L., Borkenhagen, L., Westra, W., Song, M. W., Prasad, G., & Buttar, N. S. (2008). Photodynamic therapy for barrett's esophagus: Does light still have a role? *Endoscopy, 40*(12), 1021-1025.

Williams, V. A., Watson, T. J., Zhovtis, S., Gellersen, O., Raymond, D., Jones, C., & Peters, J. H. (2008). Endoscopic and symptomatic assessment of anastomotic strictures following esophagectomy and cervical esophagogastrostomy. *Surgical Endoscopy, 22*(6), 1470-1476.

Winslow, E. R., Clouse, R. E., Desai, K. M., Frisella, P., Gunsberger, T., Soper, N. J., & Klingensmith, M. E. (2003). Influence of spastic motor disorders of the esophageal body on outcomes from laparoscopic antireflux surgery. *Surgical Endoscopy, 17*(5), 738-745.

Wong, K. K., Chung, P. H., Lan, L. C., Lin, S. C., & Tam, P. K. (2005). Trends in the prevalence of helicobacter pylori in symptomatic children in the era of eradication. *Journal of Pediatric Surgery, 40*(12), 1844-1847.

Wu, J. C., Chan, F. K., Ching, J. Y., Leung, W. K., Lee, Y. T., & Sung, J. J. (2002). Empirical treatment based on "typical" reflux symptoms is inappropriate in a population with a high prevalence of helicobacter pylori infection. *Gastrointestinal Endoscopy, 55*(4), 461-465.

Yachimski, P., Lee, R. A., Tramontano, A., Nishioka, N. S., & Hur, C. (2010). Secular trends in patients diagnosed with barrett's esophagus. *Digestive Diseases & Sciences, 55*(4), 960-966.

Yardeni, D., Yardeni, H., Coran, A. G., & Golladay, E. S. (2004). Severe esophageal damage due to button battery ingestion: Can it be prevented? *Pediatric Surgery International, 20*(7), 496-501.

Intervention Not Relevant

Abell, T. L., Johnson, W. D., Kedar, A., Runnels, J. M., Thompson, J., Weeks, E. S., . . . Griswold, M. E. (2011). A double-masked, randomized, placebo-controlled trial of temporary endoscopic mucosal gastric electrical stimulation for gastroparesis. *Gastrointestinal Endoscopy, 74*(3), 496-503.e3.

Achem, S. R. (2004). Acid inhibition in GERD-how much is enough?. *American Journal of Gastroenterology, 99*(6), 997-999.

Adibe, O. O., Nichol, P. F., Lim, F. Y., & Mattei, P. (2007). Ad libitum feeds after laparoscopic pyloromyotomy: A retrospective comparison with a standardized feeding regimen in 227 infants. *Journal of Laparoendoscopic & Advanced Surgical Techniques.Part A, 17*(2), 235-237.

Agrawal, D., Meekison, L., & Walker, W. S. (2008). Long-term clinical results of thoracoscopic heller's myotomy in the treatment of achalasia. *European Journal of Cardio-Thoracic Surgery, 34*(2), 423-426.

Akkus, M. A., Kismet, K., Erel, S., Adibelli, M. A., & Pulat, H. (2005). Case report: Duodenal stromal tumor. *Acta Gastroenterologica Belgica, 68*(1), 95-97.

Alagozlu, H., Simsek, Z., Unal, S., Cindoruk, M., Dumlu, S., & Dursun, A. (2010). Is there an association between helicobacter pylori in the inlet patch and globus sensation?. *World Journal of Gastroenterology, 16*(1), 42-47.

Allen, C. J., & Anvari, M. (2002). Preoperative symptom evaluation and esophageal acid infusion predict response to laparoscopic nissen fundoplication in gastroesophageal reflux patients who present with cough. *Surgical Endoscopy, 16*(7), 1037-1041.

Almarhabi, Y., D'Journo, X. B., Chen, L. Q., Martin, J., Ferraro, P., & Duranceau, A. (2009). A short 4-cm oesophageal myotomy relieves the obstructive symptoms of achalasia. *European Journal of Cardio-Thoracic Surgery, 36*(5), 894-900.

Alsayouf, H. (2006). Hematemesis in a neonate. *Clinical Pediatrics, 45*(1), 105-107.

Amott, D. H., & Wright, G. M. (2006). Dissecting haematoma of the oesophagus masquerading as acute myocardial infarction. *Medical Journal of Australia, 184*(4), 182-183.

Anagnostopoulos, G. K., Yao, K., Kaye, P., Fogden, E., Fortun, P., Shonde, A., . . . Ragunath, K. (2007). High-resolution magnification endoscopy can reliably identify normal gastric mucosa, helicobacter pylori-associated gastritis, and gastric atrophy. *Endoscopy, 39*(3), 202-207.

Andersson, O., Moller, R. Y., Finizia, C., & Ruth, M. (2009). A more than 10-year prospective, follow-up study of esophageal and pharyngeal acid exposure, symptoms and laryngeal findings in healthy, asymptomatic volunteers. *Scandinavian Journal of Gastroenterology, 44*(1), 23-31.

Andersson, S., Ringstrom, G., Elfvin, A., Simren, M., Lonroth, H., & Abrahamsson, H. (2011). Temporary percutaneous gastric electrical stimulation: A novel technique tested in patients with non-established indications for gastric electrical stimulation. *Digestion, 83*(1-2), 3-12.

Andrews, C. N., Mintchev, P., Neshev, E., Fraser, H. F., Storr, M., Bathe, O. F., & Urbanski, S. J. (2011). Percutaneous endoscopically assisted transenteric full-thickness gastric biopsy: Initial experience in humans. *Gastrointestinal Endoscopy, 73*(5), 949-954.

Ang, D., Teo, E. K., Ang, T. L., Ong, J., Poh, C. H., Tan, J., & Fock, K. M. (2010). To bravo or not? A comparison of wireless esophageal pH monitoring and conventional pH catheter to evaluate non-erosive gastroesophageal reflux disease in a multiracial asian cohort. *Journal of Digestive Diseases, 11*(1), 19-27.

Antoniou, S. A., Delivorias, P., Antoniou, G. A., Natsiopoulos, I., Kalambakas, A., Dalenback, J., & Makridis, C. (2008). Symptom-focused results after laparoscopic fundoplication for refractory gastroesophageal reflux disease--a prospective study. *Langenbecks Archives of Surgery, 393*(6), 979-984.

Anvari, M., & Allen, C. (2003). Five-year comprehensive outcomes evaluation in 181 patients after laparoscopic nissen fundoplication. *Journal of the American College of Surgeons, 196*(1), 51-7; discussion 57-8; author reply 58-9.

Archimandritis, A. J., Nikolopoulou, V., Kouklakis, G., Paraskevas, E., Avgerinos, A., Tsianos, E., . . . Hellenic Rabeprazole Study, G. (2005). Effects of rabeprazole on early symptom relief in gastro-oesophageal reflux disease: The hellenic rabeprazole study group surveillance study. *Current Medical Research & Opinion, 21*(4), 603-610.

Arikan, C., Ozgenc, F., Aydogdu, S., & Yagei, R. V. (2004). Duodenal biopsy in pediatric patients. *Journal of Clinical Gastroenterology, 38*(6), 540.

Armelao, F., & Tasini, E. (2008). An unfortunate (and inappropriate) gastric biopsy. *Endoscopy, 40*(Suppl 2), E27.

Armstrong, D., Marshall, J. K., Chiba, N., Enns, R., Fallone, C. A., Fass, R., . . . Canadian Association of Gastroenterology GERD Consensus,Group. (2005). Canadian consensus conference on the management of gastroesophageal reflux disease in adults - update 2004. *Canadian Journal of Gastroenterology, 19*(1), 15-35.

Aro, P., Ronkainen, J., Talley, N. J., Storskrubb, T., Bolling-Sternevald, E., & Agreus, L. (2005). Body mass index and chronic unexplained gastrointestinal symptoms: An adult endoscopic population based study. *Gut, 54*(10), 1377-1383.

Arts, J., Sifrim, D., Rutgeerts, P., Lerut, A., Janssens, J., & Tack, J. (2007). Influence of radiofrequency energy delivery at the gastroesophageal junction (the stretta procedure) on symptoms, acid exposure, and esophageal sensitivity to acid perfusion in gastroesophagal reflux disease. *Digestive Diseases & Sciences, 52*(9), 2170-2177.

Ayala, J. A., Naik-Mathuria, B., & Olutoye, O. O. (2008). Delayed presentation of congenital diaphragmatic hernia manifesting as combined-type acute gastric volvulus: A case report and review of the literature. *Journal of Pediatric Surgery, 43*(3), E35-9.

Aydin, A., Onder, G. F., Akarca, U. S., Tekin, F., Tuncyurek, M., & Musoglu, A. (2005). The efficacy of two-week therapy with ranitidine bismuth citrate, amoxicillin and clarithromycin on helicobacter pylori eradication in clarithromycinresistant and- sensitive cases. *Turkish Journal of Gastroenterology, 16*(4), 203-206.

Baigrie, R. J. (2010). Better is the enemy of good. *Archives of Surgery, 145*(6), 557.

Baldi, F., Morselli-Labate, A. M., Cappiello, R., Ghersi, S., & Italian Lansoprazole Study, G. (2002). Daily low-dose versus alternate day full-dose lansoprazole in the maintenance treatment of reflux esophagitis. *American Journal of Gastroenterology, 97*(6), 1357-1364.

Bandres, D., Ortiz, A., & Dib, J.,Jr. (2008). Superior mesenteric artery syndrome. *Gastrointestinal Endoscopy, 68*(1), 152-153.

Bardhan, K. D., & Berghofer, P. (2007). Look--but also listen! ReQuest: An essay on a new validated scale to assess the outcome of GERD treatment. *Digestion, 75*(Suppl 1), 87-100.

Bechade, D., Desrame, J., & Algayres, J. P. (2007). Gastritis cystica profunda in a patient with no history of gastric surgery. *Endoscopy, 39*(Suppl 1), E80-1.

Bektas, M., Doganay, B., Alkan, M., Ustun, Y., & Soykan, I. (2009). Esophageal motor function in familial mediterranean fever: A prospective evaluation of motility in 31 patients. *European Journal of Internal Medicine, 20*(5), 548-550.

Bhadada, S. K., Kochhar, R., Bhansali, A., Dutta, U., Kumar, P. R., Poornachandra, K. S., . . . Singh, K. (2011). Prevalence and clinical profile of celiac disease in type 1 diabetes mellitus in north india. *Journal of Gastroenterology & Hepatology, 26*(2), 378-381. doi:http://dx.doi.org/10.1111/j.1440-1746.2010.06508.x

Bhat, Y. M., & Bielefeldt, K. (2006). Capsaicin receptor (TRPV1) and non-erosive reflux disease. *European Journal of Gastroenterology & Hepatology, 18*(3), 263-270.

Bhewa, Y., Hilmi, I., Cheah, P. L., Navaratnam, P., & Goh, K. L. (2007). Evaluation of the monoclonal stool antigen test for helicobacter pylori in an asian population with dyspepsia. *Journal of Digestive Diseases, 8*(4), 207-210.

Birk, J., Pruitt, R., Haber, G., Raijman, I., Baluyut, A., Meiselman, M., & Sedghi, S. (2009). The plicator procedure for the treatment of gastroesophageal reflux disease: A registry study. *Surgical Endoscopy, 23*(2), 423-431.

Bloomston, M., Durkin, A., Boyce, H. W., Johnson, M., & Rosemurgy, A. S. (2004). Early results of laparoscopic heller myotomy do not necessarily predict long-term outcome. *American Journal of Surgery, 187*(3), 403-407.

Bloomston, M., Fraiji, E., Boyce, H. W.,Jr, Gonzalvo, A., Johnson, M., & Rosemurgy, A. S. (2003). Preoperative intervention does not affect esophageal muscle histology or patient outcomes in patients undergoing laparoscopic heller myotomy. *Journal of Gastrointestinal Surgery, 7*(2), 181-188.

Bonavina, L., DeMeester, T., Fockens, P., Dunn, D., Saino, G., Bona, D., . . . Ganz, R. A. (2010). Laparoscopic sphincter augmentation device eliminates reflux symptoms and normalizes esophageal acid exposure: One- and 2-year results of a feasibility trial. *Annals of Surgery, 252*(5), 857-862.

Bonavina, L., Saino, G. I., Bona, D., Lipham, J., Ganz, R. A., Dunn, D., & DeMeester, T. (2008). Magnetic augmentation of the lower esophageal sphincter: Results of a feasibility clinical trial. *Journal of Gastrointestinal Surgery, 12*(12), 2133-2140.

Bradshaw, W. A., Gregory, B. C., Finley, C. R., Ross, A., Wilds, T., Still, M., & Smith, C. D. (2002). Frequency of postoperative nausea and vomiting in patients undergoing laparoscopic foregut surgery. *Surgical Endoscopy, 16*(5), 777-780.

Braghetto, I., Korn, O., Debandi, A., Burdiles, P., Valladares, H., & Csendes, A. (2005). Laparoscopic cardial calibration and gastropexy for treatment of patients with reflux esophagitis: Pathophysiological basis and result. *World Journal of Surgery, 29*(5), 636-644.

Braghetto, I., Korn, O., Valladares, H., Debandi, A., Diaz, J. C., & Brunet, L. (2011). Laparoscopic surgical treatment for patients with short- and long-segment barrett's esophagus: Which technique in which patient?. *International Surgery, 96*(2), 95-103.

Braghetto, I., Korn, O., Valladares, H., Rodriguez, A., Debandi, A., & Brunet, L. (2007). Laparoscopic anterior cardiomyotomy plus anterior dor fundoplication without division of lateral and posterior periesophageal anatomic structures for treatment of achalasia of the esophagus. *Surgical Laparoscopy, Endoscopy & Percutaneous Techniques, 17*(5), 369-374.

Braghetto, I., Lanzarini, E., Korn, O., Valladares, H., Molina, J. C., & Henriquez, A. (2010). Manometric changes of the lower esophageal sphincter after sleeve gastrectomy in obese patients. *Obesity Surgery, 20*(3), 357-362.

Bresadola, V., Dado, G., Terrosu, G., Alessandrini, V., Marcellino, M. G., & Bresadola, F. (2003). Role of manometry and pH-metry in patients with symptoms and signs of gastroesophageal reflux disease. *Chirurgia Italiana, 55*(6), 785-790.

Broeders, J. A., Rijnhart-de Jong, H. G., Draaisma, W. A., Bredenoord, A. J., Smout, A. J., & Gooszen, H. G. (2009). Ten-year outcome of laparoscopic and conventional nissen fundoplication: Randomized clinical trial. *Annals of Surgery, 250*(5), 698-706.

Bromer, M. Q., Friedenberg, F., Miller, L. S., Fisher, R. S., Swartz, K., & Parkman, H. P. (2005). Endoscopic pyloric injection of botulinum toxin A for the treatment of refractory gastroparesis. *Gastrointestinal Endoscopy, 61*(7), 833-839.

Budhiraja, R., Quan, S. F., Punjabi, N. M., Drake, C. L., Dickman, R., & Fass, R. (2010). Power spectral analysis of the sleep electroencephalogram in heartburn patients with or without gastroesophageal reflux disease: A feasibility study. *Journal of Clinical Gastroenterology, 44*(2), 91-96.

Calabrese, C., Trere, D., Fabbri, A., Cenacchi, G., Vici, M., Derenzini, M., & Di Febo, G. (2007). Endoscopic appearance of GERD: Putative role of cell proliferation. *Digestive & Liver Disease, 39*(8), 713-719.

Calvet, X., Sanchez-Delgado, J., Montserrat, A., Lario, S., Ramirez-Lazaro, M. J., Quesada, M., . . . Segura, F. (2009). Accuracy of diagnostic tests for helicobacter pylori: A reappraisal. *Clinical Infectious Diseases, 48*(10), 1385-1391.

Canbay, A., Gieseler, R. K., Hoffmann, P., Holtmann, G., & Runzi, M. (2003). Persistently altered visceral perception after resection of an esophageal granular cell myoblastoma: A therapeutic concept revisited. *Zeitschrift Fur Gastroenterologie, 41*(9), 917-920.

Cardenas, A. (2004). Gastric varix: Radiological-endoscopic correlation. *Annals of Hepatology, 3*(2), 74.

Cardile, A. P., & Heppner, D. S. (2011). Gastric volvulus, borchardt's triad, and endoscopy: A rare twist. *Hawaii Medical Journal, 70*(4), 80-82.

Cardin, F., Zorzi, M., Furlanetto, A., Guerra, C., Bandini, F., Polito, D., . . . Toffanin, R. (2002). Are dyspepsia management guidelines coherent with primary care practice?. *Scandinavian Journal of Gastroenterology, 37*(11), 1269-1275.

Carmack, S. W., & Genta, R. M. (2010). The diagnostic value of the duodenal biopsy: A clinico-pathologic analysis of 28,000 patients. *Digestive & Liver Disease, 42*(7), 485-489.

Carter, D., Maor, Y., Bar-Meir, S., & Avidan, B. (2008). Prevalence and predictive signs for gastrointestinal lesions in premenopausal women with iron deficiency anemia. *Digestive Diseases & Sciences, 53*(12), 3138-3144.

Cestari, R., Villanacci, V., Bassotti, G., Rossi, E., Casa, D. D., Missale, G., . . . Genta, R. M. (2007). The pathology of gastric cardia: A prospective, endoscopic, and morphologic study. *American Journal of Surgical Pathology, 31*(5), 706-710.

Chan, K., Liu, G., Miller, L., Ma, C., Xu, W., Schlachta, C. M., & Darling, G. (2010). Lack of correlation between a self-administered subjective GERD questionnaire and pathologic GERD diagnosed by 24-h esophageal pH monitoring. *Journal of Gastrointestinal Surgery, 14*(3), 427-436.

Chan, W. W., Haroian, L. R., & Gyawali, C. P. (2011). Value of preoperative esophageal function studies before laparoscopic antireflux surgery. *Surgical Endoscopy, 25*(9), 2943-2949.

Chao, H. C., Chen, S. Y., & Kong, M. S. (2008). Successful treatment of congenital esophageal web by endoscopic electrocauterization and balloon dilatation. *Journal of Pediatric Surgery, 43*(1), e13-5.

Chen, J. Y., Chen, C. K., & Chang, K. M. (2009). Atypical cause of abdominal pain. *Gastroenterology, 137*(2), e3-4.

Chen, M. J., Wang, T. E., Chang, W. H., Liao, T. C., Lin, C. C., & Shih, S. C. (2007). Nodular gastritis: An endoscopic indicator of helicobacter pylori infection. *Digestive Diseases & Sciences, 52*(10), 2662-2666.

Chen, T. A., Lo, G. H., Lin, C. K., Lai, K. H., Wong, H. Y., Yu, H. C., . . . Chen, W. C. (2007). Acute pancreatitis-associated acute gastrointestinal mucosal lesions: Incidence, characteristics, and clinical significance. *Journal of Clinical Gastroenterology, 41*(6), 630-634.

Chen, Y. K., Raijman, I., Ben-Menachem, T., Starpoli, A. A., Liu, J., Pazwash, H., . . . Carr-Locke, D. L. (2005). Long-term outcomes of endoluminal gastroplication: A U.S. multicenter trial. *Gastrointestinal Endoscopy, 61*(6), 659-667.

Chen, Z., Bessell, J. R., Chew, A., & Watson, D. I. (2010). Laparoscopic cardiomyotomy for achalasia: Clinical outcomes beyond 5 years. *Journal of Gastrointestinal Surgery, 14*(4), 594-600.

Chen, Z., Thompson, S. K., Jamieson, G. G., Devitt, P. G., & Watson, D. I. (2011). Effect of sex on symptoms associated with gastroesophageal reflux. *Archives of Surgery, 146*(10), 1164-1169.

Cheung, J., Muller, N., & Weiss, A. (2006). Spontaneous intramural esophageal hematoma: Case report and review. *Canadian Journal of Gastroenterology, 20*(4), 285-286.

Chin, K. F., Myers, J. C., Jamieson, G. G., & Devitt, P. G. (2008). Symptoms experienced during 24-h pH monitoring and their relationship to outcome after laparoscopic total fundoplication. *Diseases of the Esophagus, 21*(5), 445-451.

Cho, Y. K., Choi, M. G., Lim, C. H., Nam, K. W., Chang, J. H., Park, J. M., . . . Chung, I. S. (2010). Diagnostic value of the PPI test for detection of GERD in korean patients and factors associated with PPI responsiveness. *Scandinavian Journal of Gastroenterology, 45*(5), 533-539.

Chousleb, E., Szomstein, S., Lomenzo, E., Higa, G., Podkameni, D., Soto, F., . . . Rosenthal, R. (2005). Laparoscopic removal of gastric band after early gastric erosion: Case report and review of the literature. *Surgical Laparoscopy, Endoscopy & Percutaneous Techniques, 15*(1), 24-27.

Chuah, S. K., Hu, T. H., Wu, K. L., Tai, W. C., Chen, T. Y., Chiu, Y. C., . . . Lee, C. M. (2009). Sonographic findings in esophageal achalasia. *Chang Gung Medical Journal, 32*(2), 204-211.

Chung, J. J., Park, H. J., Yu, J. S., Hong, Y. J., Kim, J. H., Kim, M. J., & Lee, S. I. (2008). A comparison of esophagography and esophageal transit scintigraphy in the evaluation of usefulness of endoscopic pneumatic dilatation in achalasia. *Acta Radiologica, 49*(5), 498-505.

Cinar, K., Soykan, I., & Ozden, A. (2004). The effect of helicobacter pylori eradication in patients with functional dyspepsia: Assessment of different diagnostic tests. *Turkish Journal of Gastroenterology, 15*(3), 159-163.

Ciovica, R., Gadenstatter, M., Klingler, A., Lechner, W., Riedl, O., & Schwab, G. P. (2006). Quality of life in GERD patients: Medical treatment versus antireflux surgery. *Journal of Gastrointestinal Surgery, 10*(7), 934-939.

Ciovica, R., Gadenstatter, M., Klingler, A., Neumayer, C., & Schwab, G. P. (2005). Laparoscopic antireflux surgery provides excellent results and quality of life in gastroesophageal reflux disease patients with respiratory symptoms. *Journal of Gastrointestinal Surgery, 9*(5), 633-637.

Clarke, J. O., Giday, S. A., Magno, P., Shin, E. J., Buscaglia, J. M., Jagannath, S. B., & Mullin, G. E. (2008). How good is capsule endoscopy for detection of periampullary lesions? results of a tertiary-referral center. *Gastrointestinal Endoscopy, 68*(2), 267-272.

Coates, S. W.,Jr, & DeMarco, D. C. (2004). Metastatic carcinoid tumor discovered by capsule endoscopy and not detected by esophagogastroduodenoscopy. *Digestive Diseases & Sciences, 49*(4), 639-641.

Codispoti, M., Soon, S. Y., Pugh, G., & Walker, W. S. (2003). Clinical results of thoracoscopic heller's myotomy in the treatment of achalasia. *European Journal of Cardio-Thoracic Surgery, 24*(4), 620-624.

Cohen, L. B., Johnson, D. A., Ganz, R. A., Aisenberg, J., Deviere, J., Foley, T. R., . . . Lehman, G. A. (2005). Enteryx implantation for GERD: Expanded multicenter trial results and interim postapproval follow-up to 24 months. *Gastrointestinal Endoscopy, 61*(6), 650-658.

Compare, D., Rocco, A., Liguori, E., D'Armiento, F. P., Persico, G., Masone, S., . . . Nardone, G. (2011). Global DNA hypomethylation is an early event in helicobacter pylori-related gastric carcinogenesis. *Journal of Clinical Pathology, 64*(8), 677-682.

Conklin, J. H., Singh, D., & Katlic, M. R. (2009). Epiphrenic esophageal diverticula: Spectrum of symptoms and consequences. *Journal of the American Osteopathic Association, 109*(10), 543-545.

Cowgill, S. M., Gillman, R., Kraemer, E., Al-Saadi, S., Villadolid, D., & Rosemurgy, A. (2007). Ten-year follow up after laparoscopic nissen fundoplication for gastroesophageal reflux disease. *American Surgeon, 73*(8), 748-752.

Croffie, J. M., Fitzgerald, J. F., Molleston, J. P., Gupta, S. K., Corkins, M. R., Pfefferkorn, M. D., . . . Dadzie, S. K. (2007). Accuracy and tolerability of the bravo catheter-free pH capsule in patients between the ages of 4 and 18 years. *Journal of Pediatric Gastroenterology & Nutrition, 45*(5), 559-563.

Csendes, A., Burgos, A. M., Smok, G., Burdiles, P., & Henriquez, A. (2006). Effect of gastric bypass on barrett's esophagus and intestinal metaplasia of the cardia in patients with morbid obesity. *Journal of Gastrointestinal Surgery, 10*(2), 259-264.

Cutler, A., Robinson, M., Murthy, A., & Delemos, B. (2010). Rabeprazole 20 mg for erosive esophagitis-associated symptoms in a large, community-based study: Additional results. *Digestive Diseases & Sciences, 55*(2), 338-345.

Danelius, M., Ost, A., & Lapidus, A. B. (2009). Inflammatory bowel disease-related lesions in the duodenal and gastric mucosa. *Scandinavian Journal of Gastroenterology, 44*(4), 441-445.

Dang, S., Atiq, M., Julka, R., Olden, K. W., & Aduli, F. (2009). Isolated gastric mucosal hemorrhages in idiopathic thrombocytopenic purpura. *Gastrointestinal Endoscopy, 70*(1), 167.

Dapri, G., Cadiere, G. B., & Himpens, J. (2011). Laparoscopic repeat sleeve gastrectomy versus duodenal switch after isolated sleeve gastrectomy for obesity. *Surgery for Obesity & Related Diseases, 7*(1), 38-43.

Dauer, E. H., Ponikau, J. U., Smyrk, T. C., Murray, J. A., & Thompson, D. M. (2006). Airway manifestations of pediatric eosinophilic esophagitis: A clinical and histopathologic report of an emerging association. *Annals of Otology, Rhinology & Laryngology, 115*(7), 507-517.

Davis, R. E., Iqbal, A., Gerhardt, J. D., Welch, R. A., Turaga, K., Tierney, B., . . . Filipi, C. J. (2005). A long-term comparison of plication configurations for endoluminal gastroplication: Circumferential versus helical. *Journal of Clinical Gastroenterology, 39*(10), 869-876.

de Jong, J. R., van Ramshorst, B., Timmer, R., Gooszen, H. G., & Smout, A. J. (2004). The influence of laparoscopic adjustable gastric banding on gastroesophageal reflux. *Obesity Surgery, 14*(3), 399-406.

de Jong, J. R., van Ramshorst, B., Timmer, R., Gooszen, H. G., & Smout, A. J. (2006). Effect of laparoscopic gastric banding on esophageal motility. *Obesity Surgery, 16*(1), 52-58.

de Leone, A., Tonini, M., Dominici, P., Grossi, E., Pace, F., & EMERGE Study, G. (2010). The proton pump inhibitor test for gastroesophageal reflux disease: Optimal cut-off value and duration. *Digestive & Liver Disease, 42*(11), 785-790.

Dempsey, D. T., Delano, M., Bradley, K., Kolff, J., Fisher, C., Caroline, D., . . . Daly, J. M. (2004). Laparoscopic esophagomyotomy for achalasia: Does anterior hemifundoplication affect clinical outcome?. *Annals of Surgery, 239*(6), 779-785.

den Hoed, C. M., de Vries, A. C., Mensink, P. B., Dierikx, C. M., Suzuki, H., Capelle, L., . . . Kuipers, E. J. (2011). Bovine antibody-based oral immunotherapy for reduction of intragastric helicobacter pylori colonization: A randomized clinical trial. *Canadian Journal of Gastroenterology, 25*(4), 207-213.

Dent, J., Kahrilas, P. J., Hatlebakk, J., Vakil, N., Denison, H., Franzen, S., & Lundborg, P. (2008). A randomized, comparative trial of a potassium-competitive acid blocker (AZD0865) and esomeprazole for the treatment of patients with nonerosive reflux disease. *American Journal of Gastroenterology, 103*(1), 20-26.

Desai, K. M., Frisella, M. M., & Soper, N. J. (2003). Clinical outcomes after laparoscopic antireflux surgery in patients with and without preoperative endoscopic esophagitis. *Journal of Gastrointestinal Surgery, 7*(1), 44-51.

Deviere, J., Costamagna, G., Neuhaus, H., Voderholzer, W., Louis, H., Tringali, A., . . . Schumacher, B. (2005). Nonresorbable copolymer implantation for gastroesophageal reflux disease: A randomized sham-controlled multicenter trial. *Gastroenterology, 128*(3), 532-540.

Diamantis, T., Pikoulis, E., Felekouras, E., Tsigris, C., Arvelakis, A., Karavokyros, I., & Bastounis, E. (2006). Laparoscopic esophagomyotomy for achalasia without a complementary antireflux procedure. *Journal of Laparoendoscopic & Advanced Surgical Techniques.Part A, 16*(4), 345-349.

Dinis-Ribeiro, M., Lomba-Viana, H., Silva, R., Fernandes, N., Abreu, N., Brandao, C., . . . da Costa-Pereira, A. (2004). Should we exclude individuals from endoscopy based exclusively on the absence of alarm symptoms?. *Scandinavian Journal of Gastroenterology, 39*(9), 910-911.

Dohil, R., Newbury, R., Fox, L., Bastian, J., & Aceves, S. (2010). Oral viscous budesonide is effective in children with eosinophilic esophagitis in a randomized, placebo-controlled trial. *Gastroenterology, 139*(2), 418-429.

Domingues, G. R., Moraes-Filho, J. P., & Domingues, A. G. (2011). Impact of prolonged 48-h wireless capsule esophageal pH monitoring on diagnosis of gastroesophageal reflux disease and evaluation of the relationship between symptoms and reflux episodes. *Arquivos De Gastroenterologia, 48*(1), 24-29.

Domingues, G. R., Moraes-Filho, J. P., & Domingues, A. G. (2011). Impact of prolonged 48-h wireless capsule esophageal pH monitoring on diagnosis of gastroesophageal reflux disease and evaluation of the relationship between symptoms and reflux episodes. *Arquivos De Gastroenterologia, 48*(1), 24-29.

Donahue, P. E., Horgan, S., Liu, K. J., & Madura, J. A. (2002). Floppy dor fundoplication after esophagocardiomyotomy for achalasia. *Surgery, 132*(4), 716-722.

Dudekula, A., O'Connell, M., & Bielefeldt, K. (2011). Hospitalizations and testing in gastroparesis. *Journal of Gastroenterology & Hepatology, 26*(8), 1275-1282. doi:http://dx.doi.org/10.1111/j.1440-1746.2011.06735.x

Duffy, J. P., Maggard, M., Hiyama, D. T., Atkinson, J. B., McFadden, D. W., Ko, C. Y., & Hines, O. J. (2003). Laparoscopic nissen fundoplication improves quality of life in patients with atypical symptoms of gastroesophageal reflux. *American Surgeon, 69*(10), 833-838.

Dughera, L., Cassolino, P., Cisaro, F., & Chiaverina, M. (2008). Achalasia. *Minerva Gastroenterologica e Dietologica, 54*(3), 277-285.

Eldaif, S. M., Mutrie, C. J., Rutledge, W. C., Lin, E., Force, S. D., Miller, J. I.,Jr, . . . Miller, D. L. (2009). The risk of esophageal resection after esophagomyotomy for achalasia. *Annals of Thoracic Surgery, 87*(5), 1558-1562.

Eloubeidi, M. A., & Lopes, T. L. (2009). Novel removable internally fully covered self-expanding metal esophageal stent: Feasibility, technique of removal, and tissue response in humans. *American Journal of Gastroenterology, 104*(6), 1374-1381.

Engstrom, C., Jamieson, G. G., Devitt, P. G., & Watson, D. I. (2011). Meta-analysis of two randomized controlled trials to identify long-term symptoms after division of the short gastric vessels during nissen fundoplication. *British Journal of Surgery, 98*(8), 1063-1067. doi:http://dx.doi.org/10.1002/bjs.7563

Engstrom, C., Lonroth, H., Mardani, J., & Lundell, L. (2007). An anterior or posterior approach to partial fundoplication? long-term results of a randomized trial. *World Journal of Surgery, 31*(6), 1221-1225.

Ermis, F., Akyuz, F., Arici, S., Uyanikoglu, A., Yakar, F., Pinarbasi, B., . . . Mungan, Z. (2011). Effect of proton pump inhibitor (PPI) treatment in obstructive sleep apnea syndrome: An esophageal impedance-pHmetry study. *Hepato-Gastroenterology, 58*(110-111), 1566-1573. doi:http://dx.doi.org/10.5754/hge10465

Farwell, D. G., Rees, C. J., Mouadeb, D. A., Allen, J., Chen, A. M., Enepekides, D. J., & Belafsky, P. C. (2010). Esophageal pathology in patients after treatment for head and neck cancer. *Otolaryngology - Head & Neck Surgery, 143*(3), 375-378.

Fein, M., Bueter, M., Thalheimer, A., Pachmayr, V., Heimbucher, J., Freys, S. M., & Fuchs, K. H. (2008). Ten-year outcome of laparoscopic antireflux surgery. *Journal of Gastrointestinal Surgery, 12*(11), 1893-1899.

Felix, V. N., Yogi, I., Perini, M., Echeverria, R., & Bernardi, C. (2002). Surgical treatment of the non-complicated gastroesophageal reflux: Fundoplication without division of the short gastric vessels. *Arquivos De Gastroenterologia, 39*(2), 93-97.

Finley, C. J., Kondra, J., Clifton, J., Yee, J., & Finley, R. (2010). Factors associated with postoperative symptoms after laparoscopic heller myotomy. *Annals of Thoracic Surgery, 89*(2), 392-396.

Fletcher, K. C., Goutte, M., Slaughter, J. C., Garrett, C. G., & Vaezi, M. F. (2011). Significance and degree of reflux in patients with primary extraesophageal symptoms. *Laryngoscope, 121*(12), 2561-2565. doi:http://dx.doi.org/10.1002/lary.22384

Flores, R. M. (2010). Invited commentary. *Annals of Thoracic Surgery, 89*(2), 396.

Fock, K. M., Talley, N., Hunt, R., Fass, R., Nandurkar, S., Lam, S. K., . . . Sollano, J. (2004). Report of the asia-pacific consensus on the management of gastroesophageal reflux disease. *Journal of Gastroenterology & Hepatology, 19*(4), 357-367.

Fockens, P., Bruno, M. J., Gabbrielli, A., Odegaard, S., Hatlebakk, J., Allescher, H. D., . . . Costamagna, G. (2004). Endoscopic augmentation of the lower esophageal sphincter for the treatment of gastroesophageal reflux disease: Multicenter study of the gatekeeper reflux repair system. *Endoscopy, 36*(8), 682-689.

Fockens, P., Cohen, L., Edmundowicz, S. A., Binmoeller, K., Rothstein, R. I., Smith, D., . . . Lehman, G. A. (2010). Prospective randomized controlled trial of an injectable esophageal prosthesis versus a sham procedure for endoscopic treatment of gastroesophageal reflux disease. *Surgical Endoscopy, 24*(6), 1387-1397.

Fraiji, E.,Jr, Bloomston, M., Carey, L., Zervos, E., Goldin, S., Banasiak, M., . . . Rosemurgy, A. S. (2003). Laparoscopic management of symptomatic achalasia associated with epiphrenic diverticulum. *Surgical Endoscopy, 17*(10), 1600-1603.

Franzen, T., Anderberg, B., Wiren, M., & Johansson, K. E. (2005). Long-term outcome is worse after laparoscopic than after conventional nissen fundoplication. *Scandinavian Journal of Gastroenterology, 40*(11), 1261-1268.

Franzen, T., & Johansson, K. E. (2002). Symptoms and reflux competence in relation to anatomical findings at reoperation after laparoscopic total fundoplication. *European Journal of Surgery, 168*(12), 701-706.

Frezza, E. E., Dissanaike, S., & Wachtel, M. S. (2007). Laparoscopic highly selective vagotomy with nissen fundoplication: Is there any role?. *Surgical Laparoscopy, Endoscopy & Percutaneous Techniques, 17*(5), 361-364.

Frezza, E. E., Ikramuddin, S., Gourash, W., Rakitt, T., Kingston, A., Luketich, J., & Schauer, P. (2002). Symptomatic improvement in gastroesophageal reflux disease (GERD) following laparoscopic roux-en-Y gastric bypass. *Surgical Endoscopy, 16*(7), 1027-1031.

Fujiwara, Y., Nakao, K., Inoue, T., Koishi, K., Nishio, Y., Yagyu, R., . . . Yamamura, T. (2006). Clinical significance of hiatal hernia in the development of gastroesophageal reflux after distal gastrectomy for cancer of the stomach. *Journal of Gastroenterology & Hepatology, 21*(7), 1103-1107.

Ganz, R. A., Viveiros, J., Ahmad, A., Ahmadi, A., Khalil, A., Tolkoff, M. J., . . . Hamblin, M. R. (2005). Helicobacter pylori in patients can be killed by visible light. *Lasers in Surgery & Medicine, 36*(4), 260-265.

Garcia-Altes, A., Rota, R., Barenys, M., Abad, A., Moreno, V., Pons, J. M., & Pique, J. M. (2005). Cost-effectiveness of a 'score and scope' strategy for the management of dyspepsia. *European Journal of Gastroenterology & Hepatology, 17*(7), 709-719.

Garg, N., Yano, F., Filipi, C. J., & Mittal, S. K. (2009). Long-term symptomatic outcomes after collis gastroplasty with fundoplication. *Diseases of the Esophagus, 22*(6), 532-538.

Garrigues, V., Ortiz, V., Casanova, C., Bujanda, L., Moreno-Osset, E., Rodriguez-Tellez, M., . . . Ponce, J. (2010). Disease-specific health-related quality of life in patients with esophageal achalasia before and after therapy. *Neurogastroenterology & Motility, 22*(7), 739-745.

Gatta, L., Ricci, C., Stanghellini, V., Ali, A., Menegatti, M., Morselli Labate, A. M., . . . Vaira, D. (2003). Best cut-off values for [14C]-urea breath tests for helicobacter pylori detection. *Scandinavian Journal of Gastroenterology, 38*(11), 1144-1148.

Girawan, D., Abdurachman, S. A., Djumhana, A., Roslia, J., & Pramudiyo, R. (2004). Comparison of endoscopic gastric mucosa features after administration of piroxicam to meloxicam and their correlation with dyspepsia symptoms in elderly patient with knee osteoarthritis. *Acta Medica Indonesiana, 36*(4), 202-206.

Gisbert, J. P., Aguado, B., Luna, M., Nistal, S., Asenjo, L. M., Reina, T., . . . Arranz, R. (2006). Gastric MALT lymphoma: Clinical characteristics and prevalence of H. pylori infection in a series of 37 cases. *Revista Espanola De Enfermedades Digestivas, 98*(9), 655-665.

Gisbert, J. P., Bermejo, F., Castro-Fernandez, M., Perez-Aisa, A., Fernandez-Bermejo, M., Tomas, A., . . . pylori Study Group of the Asociacion Espanola de,Gastroenterologia. (2008). Second-line rescue therapy with levofloxacin after H. pylori treatment failure: A spanish multicenter study of 300 patients. *American Journal of Gastroenterology, 103*(1), 71-76.

Goitein, D., Papasavas, P. K., Gagne, D., Ahmad, S., & Caushaj, P. F. (2005). Gastrojejunal strictures following laparoscopic roux-en-Y gastric bypass for morbid obesity. *Surgical Endoscopy, 19*(5), 628-632.

Goldsmith, H., & Herman, L. (2002). Endoluminal gastroplication. A new therapeutic endoscopic procedure for gastroesophageal reflux disease. *Gastroenterology Nursing, 25*(1), 15-19.

Gorecki, P. J., Hinder, R. A., Libbey, J. S., Bammer, T., & Floch, N. (2002). Redo laparoscopic surgery for achalasia. *Surgical Endoscopy, 16*(5), 772-776.

Granderath, F. A., Kamolz, T., Schweiger, U. M., & Pointner, R. (2002). Long-term follow-up after laparoscopic refundoplication for failed antireflux surgery: Quality of life, symptomatic outcome, and patient satisfaction. *Journal of Gastrointestinal Surgery, 6*(6), 812-818.

Grigolon, A., Cantu, P., Savojardo, D., Conte, D., & Penagini, R. (2008). Esophageal acid exposure on proton pump inhibitors in unselected asymptomatic gastroesophageal reflux disease patients. *Journal of Clinical Gastroenterology, 42*(9), 969-973.

Gulsen, M. T., Koruk, I., Dogan, M., & Beyazit, Y. (2011). Diagnostic accuracy of cascade stomach by upper gastrointestinal endoscopy in patients with obscure symptoms: A multi-center prospective trial. *Clinics & Research in Hepatology & Gastroenterology, 35*(6-7), 489-493.

Gupta, R., Sample, C., Bamehriz, F., Birch, D., & Anvari, M. (2005). Long-term outcomes of laparoscopic heller cardiomyotomy without an anti-reflux procedure. *Surgical Laparoscopy, Endoscopy & Percutaneous Techniques, 15*(3), 129-132.

Gurlich, R., Maruna, P., & Frasko, R. (2003). Transcutaneous electrogastrography in the perioperative period in patients undergoing laparoscopic cholecystectomy and laparoscopic non-adjustable gastric banding. *Obesity Surgery, 13*(5), 714-720.

Gurski, R. R., Peters, J. H., Hagen, J. A., DeMeester, S. R., Bremner, C. G., Chandrasoma, P. T., & DeMeester, T. R. (2003). Barrett's esophagus can and does regress after antireflux surgery: A study of prevalence and predictive features. *Journal of the American College of Surgeons, 196*(5), 706-712.

Hansen, J. M., Wildner-Christensen, M., Hallas, J., & Schaffalitzky de Muckadell, O. B. (2008). Effect of a community screening for helicobacter pylori: A 5-yr follow-up study. *American Journal of Gastroenterology, 103*(5), 1106-1113.

Harrell, S. P., Studts, J. L., Dryden, G. W., Eversmann, J., Cai, L., & Wo, J. M. (2008). A novel classification scheme for gastroparesis based on predominant-symptom presentation. *Journal of Clinical Gastroenterology, 42*(5), 455-459.

Hashimoto, M., Watanabe, O., Takahashi, S., Watarai, J., Sato, T., & Yamamoto, Y. (2005). Efficacy and safety of hepatic artery infusion catheter placement without fixation in the right gastroepiploic artery. *Journal of Vascular & Interventional Radiology, 16*(4), 465-470.

Hasosah, M. Y., Sukkar, G. A., Alsahafi, A. F., Thabit, A. O., Fakeeh, M. E., Al-Zahrani, D. M., & Satti, M. B. (2011). Eosinophilic esophagitis in saudi children: Symptoms, histology and endoscopy results. *Saudi Journal of Gastroenterology, 17*(2), 119-123.

Heikkinen, M., & Farkkila, M. (2002). Long-term outcome of functional dyspepsia: Effect of helicobacter pylori infection. A 6- to 7-year follow-up study. *Scandinavian Journal of Gastroenterology, 37*(8), 905-910.

Heikkinen, M., Vornanen, M., Hollmen, S., & Farkkila, M. (2004). Prognostic significance of antrum-predominant gastritis in functional dyspepsia. *Scandinavian Journal of Gastroenterology, 39*(3), 227-231.

Hemmink, G. J., Bredenoord, A. J., Weusten, B. L., Monkelbaan, J. F., Timmer, R., & Smout, A. J. (2008). Esophageal pH-impedance monitoring in patients with therapy-resistant reflux symptoms: 'on' or 'off' proton pump inhibitor?. *American Journal of Gastroenterology, 103*(10), 2446-2453.

Hibbard, M. L., Dunst, C. M., & Swanstrom, L. L. (2011). Laparoscopic and endoscopic pyloroplasty for gastroparesis results in sustained symptom improvement. *Journal of Gastrointestinal Surgery, 15*(9), 1513-1519.

Hoffmann, K. M., Gibril, F., Entsuah, L. K., Serrano, J., & Jensen, R. T. (2006). Patients with multiple endocrine neoplasia type 1 with gastrinomas have an increased risk of severe esophageal disease including stricture and the premalignant condition, barrett's esophagus. *Journal of Clinical Endocrinology & Metabolism, 91*(1), 204-212.

Hollenz, M., Stolte, M., Leodolter, A., & Labenz, J. (2006). NSAID-associated dyspepsia and ulcers: A prospective cohort study in primary care. *Digestive Diseases, 24*(1-2), 189-194.

Holub, J. L., Silberg, D. G., Michaels, L. C., Williams, J. L., Morris, C. D., & Eisen, G. (2010). Acid-related upper endoscopy findings in patients with diabetes versus non-diabetic patients. *Digestive Diseases & Sciences, 55*(10), 2853-2859.

Hopper, A. D., Cross, S. S., McAlindon, M. E., & Sanders, D. S. (2003). Symptomatic giardiasis without diarrhea: Further evidence to support the routine duodenal biopsy?. *Gastrointestinal Endoscopy, 58*(1), 120-122.

Horowitz, N., Moshkowitz, M., Halpern, Z., & Leshno, M. (2007). Applying data mining techniques in the development of a diagnostics questionnaire for GERD. *Digestive Diseases & Sciences, 52*(8), 1871-1878.

Horowitz, N., Moshkowitz, M., Leshno, M., Ribak, J., Birkenfeld, S., Kenet, G., & Halpern, Z. (2007). Clinical trial: Evaluation of a clinical decision-support model for upper abdominal complaints in primary-care practice. *Alimentary Pharmacology & Therapeutics, 26*(9), 1277-1283.

Howden, C. W., Blume, S. W., & de Lissovoy, G. (2007). Practice patterns for managing helicobacter pylori infection and upper gastrointestinal symptoms. *American Journal of Managed Care, 13*(1), 37-44.

Huang, C. R., Sheu, B. S., Chung, P. C., & Yang, H. B. (2004). Computerized diagnosis of helicobacter pylori infection and associated gastric inflammation from endoscopic images by refined feature selection using a neural network. *Endoscopy, 36*(7), 601-608.

Huang, H. H., Lee, M. S., Shih, Y. L., Chu, H. C., Huang, T. Y., & Hsieh, T. Y. (2011). Modified mallampati classification as a clinical predictor of peroral esophagogastroduodenoscopy tolerance. *BMC Gastroenterology, 11*, 12.

Hurenkamp, G. J., Grundmeyer, H. G., Bindels, P. J., Tytgat, G. N., & Van Der Hulst, R. W. (2002). How do primary care physicians use long-term acid suppressant drugs? A population-based analysis of dutch general practices. *Journal of Family Practice, 51*(3), 241-245.

Iqbal, A., Haider, M., Desai, K., Garg, N., Kavan, J., Mittal, S., & Filipi, C. J. (2006). Technique and follow-up of minimally invasive heller myotomy for achalasia. *Surgical Endoscopy, 20*(3), 394-401.

Jafri, M., Alonso, M., Kaul, A., Dierig, J., Racadio, J., Inge, T., . . . Tiao, G. (2008). Intraoperative manometry during laparoscopic heller myotomy improves outcome in pediatric achalasia. *Journal of Pediatric Surgery, 43*(1), 66-70.

Jayasundara, J. A., de Silva, W. M., & Pathirana, A. A. (2010). Therapeutic value and outcome of gastric access loops created during hepaticojejunostomy for iatrogenic bile duct injuries. *Surgeon Journal of the Royal Colleges of Surgeons of Edinburgh & Ireland, 8*(6), 325-329.

Jeansonne, L. O., White, B. C., Pilger, K. E., Shane, M. D., Zagorski, S., Davis, S. S., . . . Smith, C. D. (2007). Ten-year follow-up of laparoscopic heller myotomy for achalasia shows durability. *Surgical Endoscopy, 21*(9), 1498-1502.

Jeong, G., Lee, J. H., Yu, M. K., Moon, W., Rhee, P. L., Paik, S. W., . . . Kim, J. J. (2006). Non-surgical management of microperforation induced by EMR of the stomach. *Digestive & Liver Disease, 38*(8), 605-608.

Jobe, B. A., Aye, R. W., Deveney, C. W., Domreis, J. S., & Hill, L. D. (2002). Laparoscopic management of giant type III hiatal hernia and short esophagus. objective follow-up at three years. *Journal of Gastrointestinal Surgery, 6*(2), 181-188.

Johnsson, F., Hatlebakk, J. G., Klintenberg, A. C., Roman, J., Toth, E., Stubberod, A., . . . Edin, R. (2003). One-week esomeprazole treatment: An effective confirmatory test in patients with suspected gastroesophageal reflux disease. *Scandinavian Journal of Gastroenterology, 38*(4), 354-359.

Jonaitis, L., Pribuisiene, R., Kupcinskas, L., & Uloza, V. (2006). Laryngeal examination is superior to endoscopy in the diagnosis of the laryngopharyngeal form of gastroesophageal reflux disease. *Scandinavian Journal of Gastroenterology, 41*(2), 131-137.

Jouannaud, V., Coutarel, P., Tossou, H., Butel, J., Vitte, R. L., Skinazi, F., . . . Association Nationale des Hepato-Gastroenterologues des Hopitaux,generaux. (2006). Cystic dystrophy of the duodenal wall associated with chronic alcoholic pancreatitis. clinical features, diagnostic procedures and therapeutic management in a retrospective multicenter series of 23 patients. *Gastroenterologie Clinique Et Biologique, 30*(4), 580-586.

Junghard, O., Carlsson, R., & Lind, T. (2003). Sufficient control of heartburn in endoscopy-negative gastro-oesophageal reflux disease trials. *Scandinavian Journal of Gastroenterology, 38*(12), 1197-1199.

Junghard, O., & Wiklund, I. K. (2007). Effect of baseline symptom severity on patient-reported outcomes in gastroesophageal reflux disease. *European Journal of Gastroenterology & Hepatology, 19*(7), 555-560.

Kahrilas, P. J., Hughes, N., & Howden, C. W. (2011). Response of unexplained chest pain to proton pump inhibitor treatment in patients with and without objective evidence of gastro-oesophageal reflux disease. *Gut, 60*(11), 1473-1478.

Kalach, N., Huvenne, H., Gosset, P., Papadopoulos, S., Dehecq, E., Decoster, A., . . . Dupont, C. (2011). Eosinophil counts in upper digestive mucosa of western european children: Variations with age, organs, symptoms, helicobacter pylori status, and pathological findings. *Journal of Pediatric Gastroenterology & Nutrition, 52*(2), 175-182.

Kamolz, T., Bammer, T., Granderath, F. A., & Pointner, R. (2002). Comorbidity of aerophagia in GERD patients: Outcome of laparoscopic antireflux surgery. *Scandinavian Journal of Gastroenterology, 37*(2), 138-143.

Kamolz, T., Granderath, F. A., & Pointner, R. (2003). Does major depression in patients with gastroesophageal reflux disease affect the outcome of laparoscopic antireflux surgery?. *Surgical Endoscopy, 17*(1), 55-60.

Kaplan, M., Mutlu, E. A., Jakate, S., Bruninga, K., Losurdo, J., Losurdo, J., & Keshavarzian, A. (2003). Endoscopy in eosinophilic esophagitis: "feline" esophagus and perforation risk. *Clinical Gastroenterology & Hepatology, 1*(6), 433-437.

Kapoor, N., Bassi, A., Sturgess, R., & Bodger, K. (2005). Predictive value of alarm features in a rapid access upper gastrointestinal cancer service. *Gut, 54*(1), 40-45.

Karamanakos, S. N., Sdralis, E., Panagiotopoulos, S., & Kehagias, I. (2010). Laparoscopy in the emergency setting: A retrospective review of 540 patients with acute abdominal pain. *Surgical Laparoscopy, Endoscopy & Percutaneous Techniques, 20*(2), 119-124.

Kasamaki, S., Kamano, T., Hayashida, Y., Motoyama, H., & Yokota, H. (2005). A percutaneous endoscopic gastrostomy tube pushed through the posterior wall of the stomach as far as the pancreas during nonendoscopic tube exchange. *Endoscopy, 37*(6), 602.

Katada, N., Sakuramoto, S., Kobayashi, N., Futawatari, N., Kuroyama, S., Kikuchi, S., & Watanabe, M. (2006). Laparoscopic heller myotomy with toupet fundoplication for achalasia straightens the esophagus and relieves dysphagia. *American Journal of Surgery, 192*(1), 1-8.

Kaufman, J. A., Houghland, J. E., Quiroga, E., Cahill, M., Pellegrini, C. A., & Oelschlager, B. K. (2006). Long-term outcomes of laparoscopic antireflux surgery for gastroesophageal reflux disease (GERD)-related airway disorder. *Surgical Endoscopy, 20*(12), 1824-1830.

Kennedy, R., Menezes, C., Ahmad, J., & Kennedy, J. A. (2010). Laparoscopic cardiomyotomy for achalasia: A single unit study. *Ulster Medical Journal, 79*(1), 16-19.

Kerz, T., & Wahlen, B. M. (2004). How long should patients refrain from oral food and fluid intake after general anaesthesia? an assessment of the swallowing reflex of postoperative neurosurgical patients. *Minimally Invasive Neurosurgery, 47*(6), 378-381.

Khajanchee, Y. S., Hong, D., Hansen, P. D., & Swanstrom, L. L. (2004). Outcomes of antireflux surgery in patients with normal preoperative 24-hour pH test results. *American Journal of Surgery, 187*(5), 599-603.

Khajanchee, Y. S., Ujiki, M., Dunst, C. M., & Swanstrom, L. L. (2009). Patient factors predictive of 24-h pH normalization following endoluminal gastroplication for GERD. *Surgical Endoscopy, 23*(11), 2525-2530.

Khajanchee, Y. S., Urbach, D. R., Butler, N., Hansen, P. D., & Swanstrom, L. L. (2002). Laparoscopic antireflux surgery in the elderly. *Surgical Endoscopy, 16*(1), 25-30.

Khan, A., Ren-Fielding, C., & Traube, M. (2011). Potentially reversible pseudoachalasia after laparoscopic adjustable gastric banding. *Journal of Clinical Gastroenterology, 45*(9), 775-779.

Khan, M., Smythe, A., Globe, J., Stoddard, C. J., & Ackroyd, R. (2010). Randomized controlled trial of laparoscopic anterior versus posterior fundoplication for gastro-oesophageal reflux disease. *ANZ Journal of Surgery, 80*(7-8), 500-505.

Kibria, R., & Barde, C. J. (2010). Pseudomelanosis of the stomach. *Endoscopy, 42*(Suppl 2), E60.

Kim, B. J., Choi, S. C., Kim, J. J., Rhee, J. C., & Rhee, P. L. (2010). Pathological bolus exposure plays a significant role in eliciting non-cardiac chest pain. *Journal of Gastroenterology & Hepatology, 25*(12), 1855-1860. doi:http://dx.doi.org/10.1111/j.1440-1746.2010.06415.x

Kim, B. J., Rheez, P. L., Lee, H., Kim, J. H., Son, H. J., Chang, D. K., . . . Kim, J. H. (2009). The clinical usefulness of the ZAP classification for non-erosive reflux disease (NERD), using distal esophageal biopsy. *Hepato-Gastroenterology, 56*(90), 385-389.

Kim, E. M., Lee, J. H., Sung, J. K., Kang, S. H., Kim, J. I., Moon, H. S., . . . Jeong, H. Y. (2010). Successful bronchial artery embolization for refractory esophageal bleeding after failed endoscopic therapy. *Endoscopy, 42*(Suppl 2), E42.

Kim, H. K., Kim, J. S., Cho, Y. S., Park, Y. W., Son, H. S., Kim, S. S., & Chae, H. S. (2008). Endoscopic removal of an unusual foreign body: A garlic-induced acute esophageal injury. *Gastrointestinal Endoscopy, 68*(3), 565-566.

Kim, K. J., & Lee, G. H. (2007). Acute abdominal pain caused by a prolapsed duodenal polyp that resolved when the polyp broke off spontaneously. *Endoscopy, 39*(Suppl 1), E92-3.

Kim, K. Y., Kim, G. H., Kim, D. U., Wang, S. G., Lee, B. J., Lee, J. C., . . . Song, G. A. (2008). Is ineffective esophageal motility associated with gastropharyngeal reflux disease?. *World Journal of Gastroenterology, 14*(39), 6030-6035.

Kim, S. S., Lau, S. T., Lee, S. L., Schaller, R.,Jr, Healey, P. J., Ledbetter, D. J., . . . Waldhausen, J. H. (2005). Pyloromyotomy: A comparison of laparoscopic, circumumbilical, and right upper quadrant operative techniques. *Journal of the American College of Surgeons, 201*(1), 66-70.

Kimura, H., Yoshida, T., & Takahashi, I. (2003). Ball valve syndrome. *Gastrointestinal Endoscopy, 58*(1), 99.

Klapow, J. C., Wilcox, C. M., Mallinger, A. P., Marks, R., Heudebert, G. R., Centor, R. M., . . . Richter, J. (2002). Characterization of long-term outcomes after toupet fundoplication: Symptoms, medication use, and health status. *Journal of Clinical Gastroenterology, 34*(5), 509-515.

Kori, M., Cohen, S., Levine, A., Givony, S., Sokolovskaia-Ziv, N., Melzer, E., & Granot, E. (2007). Collagenous gastritis: A rare cause of abdominal pain and iron-deficiency anemia. *Journal of Pediatric Gastroenterology & Nutrition, 45*(5), 603-606.

Korkmaz, M., Tarhan, E., Unal, H., Selcuk, H., Yilmaz, U., & Ozluoglu, L. (2007). Esophageal mucosal sensitivity: Possible links with clinical presentations in patients with erosive esophagitis and laryngopharyngeal reflux. *Digestive Diseases & Sciences, 52*(2), 451-456.

Korrapati, V., Babich, J. P., Balani, A., Grendell, J. H., & Kongara, K. R. (2011). Does deep sedation impact the results of 48 hours catheterless pH testing?. *World Journal of Gastroenterology, 17*(10), 1304-1307.

Kosek, V., Wykypiel, H., Weiss, H., Holler, E., Wetscher, G., Margreiter, R., & Klaus, A. (2009). Division of the short gastric vessels during laparoscopic nissen fundoplication: Clinical and functional outcome during long-term follow-up in a prospectively randomized trial. *Surgical Endoscopy, 23*(10), 2208-2213.

Kroupa, R., Hep, A., Dolina, J., Valek, V., Matyasova, Z., Prokesova, J., . . . Novotny, I. (2010). Combined treatment of achalasia - botulinum toxin injection followed by pneumatic dilatation: Long-term results. *Diseases of the Esophagus, 23*(2), 100-105.

Kunsch, S., Neesse, A., Linhart, T., Steinkamp, M., Fensterer, H., Adler, G., . . . Ellenrieder, V. (2009). Impact of pantoprazole on duodeno-gastro-esophageal reflux (DGER). *Zeitschrift Fur Gastroenterologie, 47*(3), 277-282.

Kurbegov, A., Grabb, B., & Bealer, J. (2010). Superior mesenteric artery syndrome in a 16-year-old with bilious emesis. *Current Opinion in Pediatrics, 22*(5), 664-667.

Kuroki, T., Tajima, Y., Tsutsumi, R., Mishima, T., Kitasato, A., Adachi, T., & Kanematsu, T. (2006). Inferior branch-preserving superior head resection of the pancreas with gastric wall-covering method for intraductal papillary mucinous adenoma. *American Journal of Surgery, 191*(6), 823-826.

Lacy, B. E., Dukowicz, A. C., Robertson, D. J., Weiss, J. E., Teixeira, P., & Kelley, M. L.,Jr. (2011). Clinical utility of the wireless pH capsule. *Journal of Clinical Gastroenterology, 45*(5), 429-435.

Lamb, P. J., Myers, J. C., Thompson, S. K., & Jamieson, G. G. (2009). Laparoscopic fundoplication in patients with a hypertensive lower esophageal sphincter. *Journal of Gastrointestinal Surgery, 13*(1), 61-65.

Lanuti, M., de Delva, P. E., Wright, C. D., Gaissert, H. A., Wain, J. C., Donahue, D. M., . . . Mathisen, D. J. (2007). Post-esophagectomy gastric outlet obstruction: Role of pyloromyotomy and management with endoscopic pyloric dilatation. *European Journal of Cardio-Thoracic Surgery, 31*(2), 149-153.

Lauffer, A., Forcelini, C. M., Ruas, L. O., Madalosso, C. A., & Fornari, F. (2011). Gastroesophageal reflux disease is inversely related with glycemic control in morbidly obese patients. *Obesity Surgery, 21*(7), 864-870.

Leclair, M. D., Plattner, V., Mirallie, E., Lejus, C., Nguyen, J. M., Podevin, G., & Heloury, Y. (2007). Laparoscopic pyloromyotomy for hypertrophic pyloric stenosis: A prospective, randomized controlled trial. *Journal of Pediatric Surgery, 42*(4), 692-698.

Lee, Y. S., Choi, S. H., Son, Y. I., Park, Y. H., Kim, S. Y., & Nam, S. Y. (2011). Prospective, observational study using rabeprazole in 455 patients with laryngopharyngeal reflux disease. *European Archives of Oto-Rhino-Laryngology, 268*(6), 863-869.

Leeder, P. C., Watson, D. I., & Jamieson, G. G. (2002). Laparoscopic fundoplication for patients with symptoms but no objective evidence of gastroesophageal reflux. *Diseases of the Esophagus, 15*(4), 309-314.

Leelakusolvong, S., Sinpeng, T., Pongprasobchai, S., Tanwandee, T., Kachintorn, U., & Manatsathit, S. (2006). Effect of botulinum toxin injection for achalasia in thai patients. *Journal of the Medical Association of Thailand, 89*(Suppl 5), S67-72.

Lennon, M. J., Gibbs, N. M., Weightman, W. M., Leber, J., Ee, H. C., & Yusoff, I. F. (2005). Transesophageal echocardiography-related gastrointestinal complications in cardiac surgical patients. *Journal of Cardiothoracic & Vascular Anesthesia, 19*(2), 141-145.

Leontiadis, G. I., Sreedharan, A., Dorward, S., Barton, P., Delaney, B., Howden, C. W., . . . Forman, D. (2007). Systematic reviews of the clinical effectiveness and cost-effectiveness of proton pump inhibitors in acute upper gastrointestinal bleeding. *Health Technology Assessment (Winchester, England), 11*(51), iii-iv, 1-164.

Leung, F. W. (2008). Endoscopic reflectance spectrophotometry and visible light spectroscopy in clinical gastrointestinal studies. *Digestive Diseases & Sciences, 53*(6), 1669-1677.

Levin, D. N., Diamond, I. R., & Langer, J. C. (2011). Complete vs partial fundoplication in children with esophageal atresia. *Journal of Pediatric Surgery, 46*(5), 854-858.

Lew, J. I., Daud, A., DiGorgi, M. F., Olivero-Rivera, L., Davis, D. G., & Bessler, M. (2006). Preoperative esophageal manometry and outcome of laparoscopic adjustable silicone gastric banding. *Surgical Endoscopy, 20*(8), 1242-1247.

Li, X. B., Liu, W. Z., Ge, Z. Z., Chen, X. Y., Shi, Y., & Xiao, S. D. (2005). Helicobacter pylori "test-and-treat" strategy is not suitable for the management of patients with uninvestigated dyspepsia in shanghai. *Scandinavian Journal of Gastroenterology, 40*(9), 1028-1031.

Liao, C. C., Lee, C. L., Lin, B. R., Bai, C. H., Hsieh, Y. H., Wu, C. H., & Gostout, C. J. (2008). Endoluminal gastroplication for the treatment of gastroesophageal reflux disease: A 2-year prospective pilot study from taiwan. *Journal of Gastroenterology & Hepatology, 23*(3), 398-405.

Lin, C. C., Wang, Y. Y., Wang, K. L., Lien, H. C., Liang, M. T., Yen, T. T., . . . Wang, C. C. (2009). Association of heartburn and laryngopharyngeal symptoms with endoscopic reflux esophagitis, smoking, and drinking. *Otolaryngology - Head & Neck Surgery, 141*(2), 264-271.

Lindeboom, M. Y., Ringers, J., Straathof, J. W., van Rijn, P. J., Neijenhuis, P., & Masclee, A. A. (2007). The effect of laparoscopic partial fundoplication on dysphagia, esophageal and lower esophageal sphincter motility. *Diseases of the Esophagus, 20*(1), 63-68.

Lindenmann, J., Maier, A., Eherer, A., Matzi, V., Tomaselli, F., Smolle, J., & Smolle-Juettner, F. M. (2005). The incidence of gastroesophageal reflux after transthoracic esophagocardio-myotomy without fundoplication: A long term follow-up. *European Journal of Cardio-Thoracic Surgery, 27*(3), 357-360.

Linsalata, M., Russo, F., Berloco, P., Caruso, M. L., Matteo, G. D., Cifone, M. G., . . . Di Leo, A. (2004). The influence of lactobacillus brevis on ornithine decarboxylase activity and polyamine profiles in helicobacter pylori-infected gastric mucosa. *Helicobacter, 9*(2), 165-172.

Liu, J. J., Carr-Locke, D. L., Lee, L. S., Brooks, D. C., & Saltzman, J. R. (2004). Endoluminal gastroplication for treatment of patients with classic gastroesophageal reflux symptoms and borderline 24-h pH studies. *Scandinavian Journal of Gastroenterology, 39*(7), 615-620.

Locke, G. R.,3rd. (2005). Current medical management of gastroesophageal reflux disease. *Thoracic Surgery Clinics, 15*(3), 369-375.

Mahafza, T., Batieha, A., Suboh, M., & Khrais, T. (2002). Esophageal foreign bodies: A jordanian experience. *International Journal of Pediatric Otorhinolaryngology, 64*(3), 225-227.

Mahmood, Z., McMahon, B. P., Arfin, Q., Byrne, P. J., Reynolds, J. V., Murphy, E. M., & Weir, D. G. (2003). Endocinch therapy for gastro-oesophageal reflux disease: A one year prospective follow up. *Gut, 52*(1), 34-39.

Malhotra, A., Jones, L., & Drugas, G. (2008). Simultaneous gastric and small intestinal trichobezoars. *Pediatric Emergency Care, 24*(11), 774-776.

Manes, G., Balzano, A., Marone, P., Lioniello, M., & Mosca, S. (2002). Appropriateness and diagnostic yield of upper gastrointestinal endoscopy in an open-access endoscopy system: A prospective observational study based on the maastricht guidelines. *Alimentary Pharmacology & Therapeutics, 16*(1), 105-110.

Mason, R. J., Lipham, J., Eckerling, G., Schwartz, A., & Demeester, T. R. (2005). Gastric electrical stimulation: An alternative surgical therapy for patients with gastroparesis. *Archives of Surgery, 140*(9), 841-846.

Matsubara, M., Hirasaki, S., & Suzuki, S. (2007). Gastric penetration by an ingested toothpick successfully managed with computed tomography and endoscopy. *Internal Medicine, 46*(13), 971-974.

Matsumoto, Y., Ito, M., Kamino, D., Tanaka, S., Haruma, K., & Chayama, K. (2008). Relation between histologic gastritis and gastric motility in japanese patients with functional dyspepsia: Evaluation by transabdominal ultrasonography. *Journal of Gastroenterology, 43*(5), 332-337.

Mc Namara, D., Buckley, M., & O'Morain, C. (2002). Helicobacter pylori-induced duodenal ulcer frequently coincides with gastro-oesophageal reflux disease. *Digestive & Liver Disease, 34*(8), 542-546.

McClusky, D. A.,3rd, Khaitan, L., Swafford, V. A., & Smith, C. D. (2007). Radiofrequency energy delivery to the lower esophageal sphincter (stretta procedure) in patients with recurrent reflux after antireflux surgery: Can surgery be avoided?. *Surgical Endoscopy, 21*(7), 1207-1211.

Mearin, F., Rodrigo, L., Perez-Mota, A., Balboa, A., Jimenez, I., Sebastian, J. J., & Paton, C. (2004). Levosulpiride and cisapride in the treatment of dysmotility-like functional dyspepsia: A randomized, double-masked trial. *Clinical Gastroenterology & Hepatology, 2*(4), 301-308.

Mehta, R., Unnikrishnan, G., Sudheer, O. V., John, A., Dhar, P., Sudhindran, S., & Balakrishnan, V. (2004). Incidental detection of tubular esophageal duplication in gastric cardia malignancy. *Indian Journal of Gastroenterology, 23*(5), 192.

Melleney, E. M., & Willoughby, C. P. (2002). Audit of a nurse endoscopist based one stop dyspepsia clinic. *Postgraduate Medical Journal, 78*(917), 161-164.

Meneghelli, U. G., Boaventura, S., Moraes-Filho, J. P., Leitao, O., Ferrari, A. P., Almeida, J. R., . . . Fischer, R. (2002). Efficacy and tolerability of pantoprazole versus ranitidine in the treatment of reflux esophagitis and the influence of helicobacter pylori infection on healing rate. *Diseases of the Esophagus, 15*(1), 50-56.

Metz, D. C., Howden, C. W., Perez, M. C., Larsen, L., O'Neil, J., & Atkinson, S. N. (2009). Clinical trial: Dexlansoprazole MR, a proton pump inhibitor with dual delayed-release technology, effectively controls symptoms and prevents relapse in patients with healed erosive oesophagitis. *Alimentary Pharmacology & Therapeutics, 29*(7), 742-754.

Michail, S., Nanagas, V., & Mezoff, A. G. (2008). An unusual cause of postfundoplication vomiting. *Journal of Pediatric Surgery, 43*(3), E45-7.

Milone, L., Daud, A., Durak, E., Olivero-Rivera, L., Schrope, B., Inabnet, W. B., . . . Bessler, M. (2008). Esophageal dilation after laparoscopic adjustable gastric banding. *Surgical Endoscopy, 22*(6), 1482-1486.

Milutinovic, A. S., Todorovic, V., Milosavljevic, T., Micev, M., Spuran, M., & Drndarevic, N. (2003). Somatostatin and D cells in patients with gastritis in the course of helicobacter pylori eradication: A six-month, follow-up study. *European Journal of Gastroenterology & Hepatology, 15*(7), 755-766.

Mine, S., Iida, T., Tabata, T., Okada, Y., & Tanaka, Y. (2008). Increased esophageal mucosal/submucosal blood flow in patients with gastroesophageal reflux disease: Normalization by treatment with a proton pump inhibitor. *Journal of Gastroenterology & Hepatology, 23*(2), 303-309.

Misra, A., Chourasia, D., & Ghoshal, U. C. (2010). Manometric and symptomatic spectrum of motor dysphagia in a tertiary referral center in northern india. *Indian Journal of Gastroenterology, 29*(1), 12-16.

Monkemuller, K., Neumann, H., Nocon, M., Vieth, M., Labenz, J., Willich, S. N., . . . Malfertheiner, P. (2008). Serum gastrin and pepsinogens do not correlate with the different grades of severity of gastro-oesophageal reflux disease: A matched case-control study. *Alimentary Pharmacology & Therapeutics, 28*(4), 491-496.

Moolsintong, P., & Burton, F. R. (2008). Pancreatic function testing is best determined by the extended endoscopic collection technique. *Pancreas, 37*(4), 418-421.

Moraes-Filho, J., Cecconello, I., Gama-Rodrigues, J., Castro, L., Henry, M. A., Meneghelli, U. G., . . . Brazilian Consensus, G. (2002). Brazilian consensus on gastroesophageal reflux disease: Proposals for assessment, classification, and management. *American Journal of Gastroenterology, 97*(2), 241-248.

Mori, A., Ohashi, N., Yoshida, A., Nozaki, M., Tatebe, H., Okuno, M., . . . Hongo, M. (2011). Unsedated transnasal ultrathin esophagogastroduodenoscopy may provide better diagnostic performance in gastroesophageal reflux disease. *Diseases of the Esophagus, 24*(2), 92-98. doi:http://dx.doi.org/10.1111/j.1442-2050.2010.01098.x

Motta, C. R., Cunha, M. P., Queiroz, D. M., Cruz, F. W., Guerra, E. J., Mota, R. M., & Braga, L. L. (2008). Gastric precancerous lesions and helicobacter pylori infection in relatives of gastric cancer patients from northeastern brazil. *Digestion, 78*(1), 3-8.

Mudipalli, R. S., Remes-Troche, J. M., Andersen, L., & Rao, S. S. (2007). Functional chest pain: Esophageal or overlapping functional disorder. *Journal of Clinical Gastroenterology, 41*(3), 264-269.

Mukherjee, M., Oh, J., Khdair, A., & Grosman, I. (2008). Esophageal mucosal bridges associated with idiopathic esophageal ulcer treated with argon plasma coagulation. *Gastrointestinal Endoscopy, 68*(2), 387-389.

Muretto, P., Graziano, F., Staccioli, M. P., Barbanti, I., Bartolucci, A., Paolini, G., . . . De Gaetano, A. (2003). An endogastric capsule for measuring tumor markers in gastric juice: An evaluation of the safety and efficacy of a new diagnostic tool. *Annals of Oncology, 14*(1), 105-109.

Nada, R., Duseja, A., Sachdev, A., & Mohan, H. (2002). Comparative analysis of duodenal biopsy tissue orientation supported on vegetable matrix versus filter paper. *Indian Journal of Gastroenterology, 21*(3), 110-112.

Nakao, H., Konishi, H., Mitsufuji, S., Yamauchi, J., Yasu, T., Taniguchi, J., . . . Okanoue, T. (2007). Comparison of clinical features and patient background in functional dyspepsia and peptic ulcer. *Digestive Diseases & Sciences, 52*(9), 2152-2158.

Nasseri-Moghaddam, S., Malekzadeh, R., Sotoudeh, M., Tavangar, M., Azimi, K., Sohrabpour, A. A., . . . Minapoor, M. (2003). Lower esophagus in dyspeptic iranian patients: A prospective study. *Journal of Gastroenterology & Hepatology, 18*(3), 315-321.

Nguyen, D. M., El-Serag, H. B., Shub, M., Integlia, M., Henderson, L., Richardson, P., . . . Gilger, M. A. (2011). Barrett's esophagus in children and adolescents without neurodevelopmental or tracheoesophageal abnormalities: A prospective study. *Gastrointestinal Endoscopy, 73*(5), 875-880.

Nijjar, R. S., Watson, D. I., Jamieson, G. G., Archer, S., Bessell, J. R., Booth, M., . . . International Society for the Diseases of the Esophagus-Australasian,Section. (2010). Five-year follow-up of a multicenter, double-blind randomized clinical trial of laparoscopic nissen vs anterior 90 degrees partial fundoplication. *Archives of Surgery, 145*(6), 552-557.

Nishimoto, Y., Taguchi, T., Ogita, K., Hashizume, M., & Suita, S. (2005). Endoscopic diverticulotomy for symptomatic pediatric esophageal diverticula. *Pediatric Surgery International, 21*(1), 50-53.

Nkrumah, K. N. (2002). Endoscopic evaluation of upper abdominal symptoms in adult patients, saudi aramco-ai hasa health center, saudi arabia. *West African Journal of Medicine, 21*(1), 1-4.

Noar, M. D., & Lotfi-Emran, S. (2007). Sustained improvement in symptoms of GERD and antisecretory drug use: 4-year follow-up of the stretta procedure. *Gastrointestinal Endoscopy, 65*(3), 367-372.

Noordzij, J. P., Khidr, A., Desper, E., Meek, R. B., Reibel, J. F., & Levine, P. A. (2002). Correlation of pH probe-measured laryngopharyngeal reflux with symptoms and signs of reflux laryngitis. *Laryngoscope, 112*(12), 2192-2195.

Nozu, T., & Komiyama, H. (2008). Clinical characteristics of asymptomatic esophagitis. *Journal of Gastroenterology, 43*(1), 27-31.

Numans, M. E., & de Wit, N. J. (2003). Reflux symptoms in general practice: Diagnostic evaluation of the carlsson-dent gastro-oesophageal reflux disease questionnaire. *Alimentary Pharmacology & Therapeutics, 17*(8), 1049-1055.

Numans, M. E., Lau, J., de Wit, N. J., & Bonis, P. A. (2004). Short-term treatment with proton-pump inhibitors as a test for gastroesophageal reflux disease: A meta-analysis of diagnostic test characteristics. *Annals of Internal Medicine, 140*(7), 518-527.

Obeidat, F. W., Lang, R. A., Knauf, A., Thomas, M. N., Huttl, T. K., Zugel, N. P., . . . Huttl, T. P. (2011). Laparoscopic anterior hemifundoplication and hiatoplasty for the treatment of upside-down stomach: Mid- and long-term results after 40 patients. *Surgical Endoscopy, 25*(7), 2230-2235.

O'Boyle, C. J., deBeaux, A. C., Watson, D. I., Ackroyd, R., Lafullarde, T., Leong, J. Y., . . . Jamieson, G. G. (2002). Helium vs carbon dioxide gas insufflation with or without saline lavage during laparoscopy. *Surgical Endoscopy, 16*(4), 620-625.

O'Boyle, C. J., Watson, D. I., Jamieson, G. G., Myers, J. C., Game, P. A., & Devitt, P. G. (2002). Division of short gastric vessels at laparoscopic nissen fundoplication: A prospective double-blind randomized trial with 5-year follow-up. *Annals of Surgery, 235*(2), 165-170.

O'Donnell, P. L., Morrow, J. B., & Fitzgerald, T. L. (2005). Adult gastric duplication cysts: A case report and review of literature. *American Surgeon, 71*(6), 522-525.

Oelschlager, B. K., Eubanks, T. R., Oleynikov, D., Pope, C., & Pellegrini, C. A. (2002). Symptomatic and physiologic outcomes after operative treatment for extraesophageal reflux. *Surgical Endoscopy, 16*(7), 1032-1036.

Oezcelik, A., Hagen, J. A., Halls, J. M., Leers, J. M., Abate, E., Ayazi, S., . . . DeMeester, T. R. (2009). An improved method of assessing esophageal emptying using the timed barium study following surgical myotomy for achalasia. *Journal of Gastrointestinal Surgery, 13*(1), 14-18.

Okuyama, M., Motoyama, S., Maruyama, K., Sasaki, K., Sato, Y., & Ogawa, J. (2008). Proton pump inhibitors relieve and prevent symptoms related to gastric acidity after esophagectomy. *World Journal of Surgery, 32*(2), 246-254.

Omura, N., Kashiwagi, H., Yano, F., Tsuboi, K., Ishibashi, Y., Hoshino, M., & Yanaga, K. (2011). Effect of laparoscopic esophagomyotomy on chest pain associated with achalasia and prediction of therapeutic outcomes. *Surgical Endoscopy, 25*(4), 1048-1053.

Omura, N., Kashiwagi, H., Yano, F., Tsuboi, K., Ishibashi, Y., Kawasaki, N., . . . Yanaga, K. (2006). Therapeutic effects of laparoscopic fundoplication for nonerosive gastroesophageal reflux disease. *Surgery Today, 36*(11), 954-960.

Oncel, M., Remzi, F. H., Church, J. M., Goldblum, J. R., Zutshi, M., & Fazio, V. W. (2003). Course and follow-up of solitary peutz-jeghers polyps: A case series. *International Journal of Colorectal Disease, 18*(1), 33-35.

Onder, G., Aydin, A., Akarca, U., Tekin, F., Ozutemiz, O., & Ilter, T. (2007). High helicobacter pylori resistance rate to clarithromycin in turkey. *Journal of Clinical Gastroenterology, 41*(8), 747-750.

O'Rourke, R. W., Khajanchee, Y. S., Urbach, D. R., Lee, N. N., Lockhart, B., Hansen, P. D., & Swanstrom, L. L. (2003). Extended transmediastinal dissection: An alternative to gastroplasty for short esophagus. *Archives of Surgery, 138*(7), 735-740.

Ortiz, A., de Haro, L. F., Parrilla, P., Lage, A., Perez, D., Munitiz, V., . . . Molina, J. (2008). Very long-term objective evaluation of heller myotomy plus posterior partial fundoplication in patients with achalasia of the cardia. *Annals of Surgery, 247*(2), 258-264.

Ortiz, V., Ponce, M., Fernandez, A., Martinez, B., Ponce, J. L., Garrigues, V., & Ponce, J. (2006). Value of heartburn for diagnosing gastroesophageal reflux disease in severely obese patients. *Obesity, 14*(4), 696-700.

Overholt, B. F., Dean, P. J., Galanko, J. A., & Lightdale, C. J. (2010). Does ablative therapy for barrett esophagus affect the depth of subsequent esophageal biopsy as compared with controls?. *Journal of Clinical Gastroenterology, 44*(10), 676-681.

Ozturk, E., Yesilova, Z., Ilgan, S., Arslan, N., Erdil, A., Celasun, B., . . . Bayhan, H. (2003). A new, practical, low-dose 14C-urea breath test for the diagnosis of helicobacter pylori infection: Clinical validation and comparison with the standard method. *European Journal of Nuclear Medicine & Molecular Imaging, 30*(11), 1457-1462.

Pace, F., & Pace, M. (2010). The proton pump inhibitor test and the diagnosis of gastroesophageal reflux disease. *Expert Review of Gastroenterology & Hepatology, 4*(4), 423-427.

Pallati, P. K., & Mittal, S. K. (2011). Operative interventions for failed heller myotomy: A single institution experience. *American Surgeon, 77*(3), 330-336.

Palmer, A. D., Herrington, H. C., Rad, I. C., & Cohen, J. I. (2007). Dysphagia after endoscopic repair of zenker's diverticulum. *Laryngoscope, 117*(4), 617-622.

Panteris, V., & Karamanolis, D. G. (2005). Different aspects in functional dyspepsia. *Hepato-Gastroenterology, 52*(66), 1782-1791.

Patti, M. G., Perretta, S., Fisichella, P. M., D'Avanzo, A., Galvani, C., Gorodner, V., & Way, L. W. (2003). Laparoscopic antireflux surgery: Preoperative lower esophageal sphincter pressure does not affect outcome. *Surgical Endoscopy, 17*(3), 386-389.

Patti, M. G., Robinson, T., Galvani, C., Gorodner, M. V., Fisichella, P. M., & Way, L. W. (2004). Total fundoplication is superior to partial fundoplication even when esophageal peristalsis is weak. *Journal of the American College of Surgeons, 198*(6), 863-869.

Peng, S., Xiong, L. S., Xiao, Y. L., Wang, A. J., Lin, J. K., Hu, P. J., & Chen, M. H. (2010). Relationship between symptom response and esophageal pH level on standard dose of esomeprazole treatment for gastroesophageal reflux disease. *Chinese Medical Journal, 123*(15), 2012-2017.

Perri, F., Cotugno, R., Piepoli, A., Merla, A., Quitadamo, M., Gentile, A., . . . Andriulli, A. (2007). Aberrant DNA methylation in non-neoplastic gastric mucosa of H. pylori infected patients and effect of eradication. *American Journal of Gastroenterology, 102*(7), 1361-1371.

Pietroiusti, A., Luzzi, I., Gomez, M. J., Magrini, A., Bergamaschi, A., Forlini, A., & Galante, A. (2005). Helicobacter pylori duodenal colonization is a strong risk factor for the development of duodenal ulcer. *Alimentary Pharmacology & Therapeutics, 21*(7), 909-915.

Pilotto, A., Franceschi, M., Leandro, G., Scarcelli, C., D'Ambrosio, L. P., Paris, F., . . . Di Mario, F. (2007). Comparison of four proton pump inhibitors for the short-term treatment of esophagitis in elderly patients. *World Journal of Gastroenterology, 13*(33), 4467-4472.

Pleskow, D., Rothstein, R., Kozarek, R., Haber, G., Gostout, C., & Lembo, A. (2007). Endoscopic full-thickness plication for the treatment of GERD: Long-term multicenter results. *Surgical Endoscopy, 21*(3), 439-444.

Pommer, B., Probst, A., & Messmann, H. (2008). Gastric metastases from malignant melanoma. *Endoscopy, 40*(Suppl 2), E30-1.

Ponce, J., Ortiz, V., Maroto, N., Ponce, M., Bustamante, M., & Garrigues, V. (2011). High prevalence of heartburn and low acid sensitivity in patients with idiopathic achalasia. *Digestive Diseases & Sciences, 56*(3), 773-776.

Ponciano, H., Cecconello, I., Alves, L., Ferreira, B. D., & Gama-Rodrigues, J. (2004). Cardiaplasty and roux-en-Y partial gastrectomy (serra-doria procedure) for reoperation of achalasia. *Arquivos De Gastroenterologia, 41*(3), 155-161.

Prakash, C., Jonnalagadda, S., Azar, R., & Clouse, R. E. (2006). Endoscopic removal of the wireless pH monitoring capsule in patients with severe discomfort. *Gastrointestinal Endoscopy, 64*(5), 828-832.

Pregun, I., Zagoni, T., Peter, A., Mathe, Z., Hritz, I., & Tulassay, Z. (2008). Rare complication of upper gastrointestinal endoscopy: Doubled-back endoscope in the esophagus. *Endoscopy, 40*(Suppl 2), E48.

Punpale, A., Rangole, A., Bhambhani, N., Karimundackal, G., Desai, N., de Souza, A., . . . Mistry, R. C. (2007). Leiomyoma of esophagus. *Annals of Thoracic & Cardiovascular Surgery, 13*(2), 78-81.

Quach, D. T., Le, H. M., Nguyen, O. T., Nguyen, T. S., & Uemura, N. (2011). The severity of endoscopic gastric atrophy could help to predict operative link on gastritis assessment gastritis stage. *Journal of Gastroenterology & Hepatology, 26*(2), 281-285. doi:http://dx.doi.org/10.1111/j.1440-1746.2010.06474.x

Quispel, R., van Boxel, O. S., Schipper, M. E., Sigurdsson, V., Canninga-van Dijk, M. R., Kerckhoffs, A., . . . Schwartz, M. P. (2009). High prevalence of esophageal involvement in lichen planus: A study using magnification chromoendoscopy. *Endoscopy, 41*(3), 187-193.

Rakita, S. S., Villadolid, D., Kalipersad, C., Thometz, D., & Rosemurgy, A. (2007). BMI affects presenting symptoms of achalasia and outcome after heller myotomy. *Surgical Endoscopy, 21*(2), 258-264.

Rasool, S., Abid, S., & Jafri, W. (2007). Validity and cost comparison of 14carbon urea breath test for diagnosis of H pylori in dyspeptic patients. *World Journal of Gastroenterology, 13*(6), 925-929.

Remedios, M., Campbell, C., Jones, D. M., & Kerlin, P. (2006). Eosinophilic esophagitis in adults: Clinical, endoscopic, histologic findings, and response to treatment with fluticasone propionate. *Gastrointestinal Endoscopy, 63*(1), 3-12.

Richardson, W. S., Kennedy, C. I., & Bolton, J. S. (2006). Midterm follow-up evaluation after a novel approach to anterior fundoplication for achalasia. *Surgical Endoscopy, 20*(12), 1914-1918.

Robles-Jara, C., Robles-Medranda, C., Moncayo, M., Landivar, B., & Parrales, J. (2008). Is a 7-day helicobater pylori treatment enough for eradication and inactivation of gastric inflammatory activity?. *World Journal of Gastroenterology, 14*(18), 2838-2843.

Ross, S., Villadolid, D., Al-Saadi, S., Boyle, R., Cowgill, S. M., & Rosemurgy, A. (2008). After laparoscopic heller myotomy, do emergency department visits or readmissions predict poor long-term outcomes?. *Journal of Gastrointestinal Surgery, 12*(12), 2125-2132.

Rugge, M., Meggio, A., Pennelli, G., Piscioli, F., Giacomelli, L., De Pretis, G., & Graham, D. Y. (2007). Gastritis staging in clinical practice: The OLGA staging system. *Gut, 56*(5), 631-636.

Ruth, M., Finizia, C., & Lundell, L. (2005). Occurrence and future history of oesophageal symptoms in an urban swedish population: Results of a questionnaire-based, ten-year follow-up study. *Scandinavian Journal of Gastroenterology, 40*(6), 629-635.

Ruurda, J. P., Gooszen, H. G., & Broeders, I. A. (2004). Early experience in robot-assisted laparoscopic heller myotomy. *Scandinavian Journal of Gastroenterology - Supplement,* (241), 4-8.

Salminen, P., Sala, E., Koskenvuo, J., Karvonen, J., & Ovaska, J. (2007). Reflux laryngitis: A feasible indication for laparoscopic antireflux surgery?. *Surgical Laparoscopy, Endoscopy & Percutaneous Techniques, 17*(2), 73-78.

Sandrasegaran, K., Patel, A., Fogel, E. L., Zyromski, N. J., & Pitt, H. A. (2009). Annular pancreas in adults. *AJR.American Journal of Roentgenology, 193*(2), 455-460.

Saritas, U., Senol, A., & Ustundag, Y. (2010). The clinical presentations of ectopic biliary drainage into duodenal bulbus and stomach with a thorough review of the current literature. *BMC Gastroenterology, 10*, 2.

Savarino, E., Tutuian, R., Zentilin, P., Dulbecco, P., Pohl, D., Marabotto, E., . . . Savarino, V. (2010). Characteristics of reflux episodes and symptom association in patients with erosive esophagitis and nonerosive reflux disease: Study using combined impedance-pH off therapy. *American Journal of Gastroenterology, 105*(5), 1053-1061.

Schey, R., Dickman, R., Parthasarathy, S., Quan, S. F., Wendel, C., Merchant, J., . . . Fass, R. (2007). Sleep deprivation is hyperalgesic in patients with gastroesophageal reflux disease. *Gastroenterology, 133*(6), 1787-1795.

Schiefke, I., Soeder, H., Zabel-Langhennig, A., Teich, N., Neumann, S., Borte, G., . . . Caca, K. (2004). Endoluminal gastroplication: What are the predictors of outcome?. *Scandinavian Journal of Gastroenterology, 39*(12), 1296-1303.

Schuchert, M. J., Luketich, J. D., Landreneau, R. J., Kilic, A., Gooding, W. E., Alvelo-Rivera, M., . . . Pennathur, A. (2008). Minimally-invasive esophagomyotomy in 200 consecutive patients: Factors influencing postoperative outcomes. *Annals of Thoracic Surgery, 85*(5), 1729-1734.

Schuchert, M. J., Pettiford, B. L., Abbas, G., Oostdyk, A., Landreneau, J. R., Kilic, A., . . . Landreneau, R. J. (2010). The use of esophageal transit and gastric emptying studies in the evaluation of patients undergoing laparoscopic fundoplication. *Surgical Endoscopy, 24*(12), 3119-3126.

Schwartz, M. P., Wellink, H., Gooszen, H. G., Conchillo, J. M., Samsom, M., & Smout, A. J. (2007). Endoscopic gastroplication for the treatment of gastro-oesophageal reflux disease: A randomised, sham-controlled trial. *Gut, 56*(1), 20-28.

Scott, L. D. (2005). Rodeo endoscopy. *American Journal of Gastroenterology, 100*(12), 2611.

Scott, P. D., Harold, K. L., Heniford, B. T., & Jaroszewski, D. E. (2009). Results of laparoscopic heller myotomy for extreme megaesophagus: An alternative to esophagectomy. *Surgical Laparoscopy, Endoscopy & Percutaneous Techniques, 19*(3), 198-200.

Sgouros, S. N., Bergele, C., & Mantides, A. (2006). Eosinophilic esophagitis in adults: A systematic review. *European Journal of Gastroenterology & Hepatology, 18*(2), 211-217.

Shanjana, A., & Archana, A. (2003). Cytotoxic isolates of helicobacter pylori from peptic ulcer diseases decrease K+-dependent ATPase activity in HeLa cells. *BMC Gastroenterology, 3*, 31.

Singh, A. C., & Gurney, M. (2003). Toothpick penetration of stomach. *Gastrointestinal Endoscopy, 57*(2), 239.

Singh, S., Howarth, G., & Campbell, S. (2009). Common cause of chronic diarrhea not to be forgotten. *Gastroenterology, 137*(2), 431.

Sinha, S. K., Nain, C. K., Udawat, H. P., Prasad, K. K., Das, R., Nagi, B., & Singh, K. (2008). Cervical esophageal web and celiac disease. *Journal of Gastroenterology & Hepatology, 23*(7 Pt 1), 1149-1152.

Smith, T., Verzola, E., & Mertz, H. (2003). Low yield of endoscopy in patients with persistent dyspepsia taking proton pump inhibitors. *Gastrointestinal Endoscopy, 58*(1), 9-13.

Soejima, T., Nishimura, H., Ejima, Y., Sasaki, R., Yoden, E., Yamada, K., & Sugimura, K. (2002). Case of radiation-induced esophageal ulcer worsened after endoscopic biopsy. *Diseases of the Esophagus, 15*(3), 266-268.

Sokic-Milutinovic, A., Todorovic, V., Milosavljevic, T., Micev, M., Drndarevic, N., & Mitrovic, O. (2005). Gastrin and antral G cells in course of helicobacter pylori eradication: Six months follow up study. *World Journal of Gastroenterology, 11*(27), 4140-4147.

Somasekar, K., Morris-Stiff, G., Al-Madfai, H., Barton, K., & Hassn, A. (2010). Is a bougie required for the performance of the fundal wrap during laparoscopic nissen fundoplication?. *Surgical Endoscopy, 24*(2), 390-394.

Somefun, O. A., Wanda, C. B., Adesanya, A. A., Thomas, M. O., & Esan, O. O. (2006). Otolaryngologic manifestations of gastro-oesophageal reflux disease in lagos. *Nigerian Postgraduate Medical Journal, 13*(3), 225-229.

Spergel, J. M., Brown-Whitehorn, T. F., Beausoleil, J. L., Franciosi, J., Shuker, M., Verma, R., & Liacouras, C. A. (2009). 14 years of eosinophilic esophagitis: Clinical features and prognosis. *Journal of Pediatric Gastroenterology & Nutrition, 48*(1), 30-36.

Stanghellini, V., Armstrong, D., Monnikes, H., & Bardhan, K. D. (2004). Systematic review: Do we need a new gastro-oesophageal reflux disease questionnaire? *Alimentary Pharmacology & Therapeutics, 19*(5), 463-479.

Stanghellini, V., Armstrong, D., Monnikes, H., & Bardhan, K. D. (2007). Systematic review: Do we need a new gastro-oesophageal reflux disease questionnaire? *Digestion, 75*(Suppl 1), 3-16.

Stanghellini, V., Cogliandro, R., Barbara, G., Cremon, C., De Giorgio, R., & Corinaldesi, R. (2008). How relevant is symptom evaluation in NERD? *Digestion, 78*(Suppl 1), 11-16.

Stevens, T., Conwell, D. L., Zuccaro, G.,Jr, Lewis, S. A., & Love, T. E. (2007). The efficiency of endoscopic pancreatic function testing is optimized using duodenal aspirates at 30 and 45 minutes after intravenous secretin. *American Journal of Gastroenterology, 102*(2), 297-301.

Sundaram, P., Gupte, G. L., Millar, A. J., & McKiernan, P. J. (2007). Endoscopic ultrasound is a useful diagnostic test for superior mesenteric artery syndrome in children. *Journal of Pediatric Gastroenterology & Nutrition, 45*(4), 474-476.

Talley, N. J., Locke, G. R.,3rd, McNally, M., Schleck, C. D., Zinsmeister, A. R., & Melton, L. J.,3rd. (2008). Impact of gastroesophageal reflux on survival in the community. *American Journal of Gastroenterology, 103*(1), 12-19.

Talley, N. J., Venables, T. L., Green, J. R., Armstrong, D., O'Kane, K. P., Giaffer, M., . . . Hasselgren, G. S. (2002). Esomeprazole 40 mg and 20 mg is efficacious in the long-term management of patients with endoscopy-negative gastro-oesophageal reflux disease: A placebo-controlled trial of on-demand therapy for 6 months. *European Journal of Gastroenterology & Hepatology, 14*(8), 857-863.

Talley, N. J., Walker, M. M., Aro, P., Ronkainen, J., Storskrubb, T., Hindley, L. A., . . . Agreus, L. (2007). Non-ulcer dyspepsia and duodenal eosinophilia: An adult endoscopic population-based case-control study. *Clinical Gastroenterology & Hepatology, 5*(10), 1175-1183.

Tanimura, T., Adachi, K., Furuta, K., Ohara, S., Morita, T., Koshino, K., . . . Kinoshita, Y. (2011). Usefulness of catheterless radiotelemetry pH monitoring system to examine the relationship between duodenal acidity and upper gastrointestinal symptoms. *Journal of Gastroenterology & Hepatology, 26*(1), 98-103. doi:http://dx.doi.org/10.1111/j.1440-1746.2010.06468.x

Tapper, D., Morton, C., Kraemer, E., Villadolid, D., Ross, S. B., Cowgill, S. M., & Rosemurgy, A. S. (2008). Does concomitant anterior fundoplication promote dysphagia after laparoscopic heller myotomy?. *American Surgeon, 74*(7), 626-633.

Testino, G., Cornaggia, M., De Iaco, F., & Gada, D. (2002). Is it possible with an immunophenotypic study to foresee the oncologic risk of epithelial gastric dysplasia?. *Hepato-Gastroenterology, 49*(45), 601-603.

Thompson, S. K., Jamieson, G. G., Myers, J. C., Chin, K. F., Watson, D. I., & Devitt, P. G. (2007). Recurrent heartburn after laparoscopic fundoplication is not always recurrent reflux. *Journal of Gastrointestinal Surgery, 11*(5), 642-647.

Thomson, M., Antao, B., Hall, S., Afzal, N., Hurlstone, P., Swain, C. P., & Fritscher-Ravens, A. (2008). Medium-term outcome of endoluminal gastroplication with the EndoCinch device in children. *Journal of Pediatric Gastroenterology & Nutrition, 46*(2), 172-177.

Thong-Ngam, D., Tangkijvanich, P., Treeprasertsuk, S., Wisedopas, N., & Kullavanijaya, P. (2002). Effectiveness of ranitidine bismuth citrate based triple therapy for treating helicobacter pylori. *Journal of the Medical Association of Thailand, 85*(10), 1054-1059.

Tomita, R., Ikeda, T., Fujisaki, S., Koshinaga, T., & Tanjoh, K. (2006). Effects of mosapride citrate on patients after vagal nerve preserving distal gastrectomy reconstructed by interposition of a jejunal J pouch with a jejunal conduit for early gastric cancer. *World Journal of Surgery, 30*(2), 205-212.

Toth, E., Sjolund, K., Thorsson, O., & Thorlacius, H. (2002). Evaluation of gastric acid secretion at endoscopy with a modified congo red test. *Gastrointestinal Endoscopy, 56*(2), 254-259.

Triadafilopoulos, G., DiBaise, J. K., Nostrant, T. T., Stollman, N. H., Anderson, P. K., Wolfe, M. M., . . . Utley, D. S. (2002). The stretta procedure for the treatment of GERD: 6 and 12 month follow-up of the U.S. open label trial. *Gastrointestinal Endoscopy, 55*(2), 149-156.

Tsiaoussis, J., Pechlivanides, G., Gouvas, N., Athanasakis, E., Zervakis, N., Manitides, A., & Xynos, E. (2008). Patterns of esophageal acid exposure after laparoscopic heller's myotomy and dor's fundoplication for esophageal achalasia. *Surgical Endoscopy, 22*(6), 1493-1499.

Tuncer, K., & Ozutemiz, O. (2003). An unusual complication of esophageal variceal band ligation: Iatrogenic esophageal foreign body. *Endoscopy, 35*(5), 460.

Tutar, E., Ertem, D., Unluguzel, G., Tanrikulu, S., Haklar, G., Celikel, C., . . . Pehlivanoglu, E. (2008). Reactive oxygen species and chemokines: Are they elevated in the esophageal mucosa of children with gastroesophageal reflux disease?. *World Journal of Gastroenterology, 14*(20), 3218-3223.

Vaananen, H., Vauhkonen, M., Helske, T., Kaariainen, I., Rasmussen, M., Tunturi-Hihnala, H., . . . Sipponen, P. (2003). Non-endoscopic diagnosis of atrophic gastritis with a blood test. correlation between gastric histology and serum levels of gastrin-17 and pepsinogen I: A multicentre study. *European Journal of Gastroenterology & Hepatology, 15*(8), 885-891.

van der Bilt, J. D., Kramer, W. L., van der Zee, D. C., & Bax, N. M. (2004). Early feeding after laparoscopic pyloromyotomy: The pros and cons. *Surgical Endoscopy, 18*(5), 746-748.

van Pinxteren, B., Numans, M. E., Lau, J., de Wit, N. J., Hungin, A. P., & Bonis, P. A. (2003). Short-term treatment of gastroesophageal reflux disease. *Journal of General Internal Medicine, 18*(9), 755-763.

Vecsei, A., Innerhofer, A., Graf, U., Binder, C., Giczi, H., Hammer, K., . . . Makristathis, A. (2011). Helicobacter pylori eradication rates in children upon susceptibility testing based on noninvasive stool polymerase chain reaction versus gastric tissue culture. *Journal of Pediatric Gastroenterology & Nutrition, 53*(1), 65-70.

Veldhuyzen van Zanten, S. J., Bradette, M., Chiba, N., Armstrong, D., Barkun, A., Flook, N., et al. (2005). Evidence-based recommendations for short- and long-term management of uninvestigated dyspepsia in primary care: An update of the canadian dyspepsia working group (CanDys) clinical management tool. *Canadian Journal of Gastroenterology, 19*(5), 285-303.

Veres, G., Korponay-Szabo, I., Maka, E., Glasz, T., Mamula, P., Papp, M., . . . Arato, A. (2011). Duodenal ulceration in a patient with celiac disease and plasminogen I deficiency: Coincidence or cofactors?. *Pediatrics, 128*(5), e1302-6.

Vilaichone, R. K., Mahachai, V., Tumwasorn, S., & Kullavanijaya, P. (2002). Gastric juice urease test and brushing urease test for helicobacter pylori detection. *Journal of the Medical Association of Thailand, 85*(Suppl 1), S74-8.

Virk, S. S., Singh, R. P., Arora, A. S., Grewal, J. S., & Puri, H. (2004). Gastric zygomycosis--an unusual cause of massive upper gastrointestinal bleed. *Indian Journal of Gastroenterology, 23*(4), 146-147.

von Renteln, D., Brey, U., Riecken, B., & Caca, K. (2008). Endoscopic full-thickness plication (plicator) with two serially placed implants improves esophagitis and reduces PPI use and esophageal acid exposure. *Endoscopy, 40*(3), 173-178.

Waltzman, M. L., Baskin, M., Wypij, D., Mooney, D., Jones, D., & Fleisher, G. (2005). A randomized clinical trial of the management of esophageal coins in children. *Pediatrics, 116*(3), 614-619.

Watson, D. I., Jamieson, G. G., Lally, C., Archer, S., Bessell, J. R., Booth, M., . . . International Society for Diseases of the Esophagus--Australasian,Section. (2004). Multicenter, prospective, double-blind, randomized trial of laparoscopic nissen vs anterior 90 degrees partial fundoplication. *Archives of Surgery, 139*(11), 1160-1167.

Watson, T. J., & Peters, J. H. (2005). Lower esophageal sphincter injections for the treatment of gastroesophageal reflux disease. *Thoracic Surgery Clinics, 15*(3), 405-415.

Wechalekar, M. D., & Southcott, A. M. (2008). Achalasia cardia presenting as stridor. *Respirology, 13*(7), 1088-1090.

Weerasuriya, N., & Snape, J. (2006). A study of candida esophagitis in elderly patients attending a district general hospital in the UK. *Diseases of the Esophagus, 19*(3), 189-192.

Weiss, H. G., Nehoda, H., Labeck, B., Peer-Kuehberger, R., Oberwalder, M., Aigner, F., & Wetscher, G. J. (2002). Adjustable gastric and esophagogastric banding: A randomized clinical trial. *Obesity Surgery, 12*(4), 573-578.

Werneck-Silva, A. L., & Prado, I. B. (2007). Dyspepsia in HIV-infected patients under highly active antiretroviral therapy. *Journal of Gastroenterology & Hepatology, 22*(11), 1712-1716.

Werneck-Silva, A. L., & Prado, I. B. (2009). Gastroduodenal opportunistic infections and dyspepsia in HIV-infected patients in the era of highly active antiretroviral therapy. *Journal of Gastroenterology & Hepatology, 24*(1), 135-139.

Wex, T., Sokic-Milutinovic, A., Todorovic, V., Bjelovic, M., Milosavljevic, T., Pesko, P., & Malfertheiner, P. (2004). Down-regulation of secretory leukocyte protease inhibitor expression in gastric mucosa is a general phenomenon in helicobacter pylori-related gastroduodenal diseases. *Digestive Diseases, 22*(4), 390-395.

Winslow, E. R., Frisella, M. M., Soper, N. J., Clouse, R. E., & Klingensmith, M. E. (2002). Patients with upright reflux have less favorable postoperative outcomes after laparoscopic antireflux surgery than those with supine reflux. *Journal of Gastrointestinal Surgery, 6*(6), 819-829.

Wong, W. M., Huang, J., Xia, H. H., Fung, F. M., Tong, T. S., Cheung, K. L., . . . Wong, B. C. (2005). Low-dose rabeprazole, amoxicillin and metronidazole triple therapy for the treatment of helicobacter pylori infection in chinese patients. *Journal of Gastroenterology & Hepatology, 20*(6), 935-940.

Wright, A. S., Williams, C. W., Pellegrini, C. A., & Oelschlager, B. K. (2007). Long-term outcomes confirm the superior efficacy of extended heller myotomy with toupet fundoplication for achalasia. *Surgical Endoscopy, 21*(5), 713-718.

Wykypiel, H., Hugl, B., Gadenstaetter, M., Bonatti, H., Bodner, J., & Wetscher, G. J. (2008). Laparoscopic partial posterior (toupet) fundoplication improves esophageal bolus propagation on scintigraphy. *Surgical Endoscopy, 22*(8), 1845-1851.

Yang, H., Watson, D. I., Lally, C. J., Devitt, P. G., Game, P. A., & Jamieson, G. G. (2008). Randomized trial of division versus nondivision of the short gastric vessels during laparoscopic nissen fundoplication: 10-year outcomes. *Annals of Surgery, 247*(1), 38-42.

Yi, S. W., Cheon, J. H., Kim, J. H., Lee, S. K., Kim, T. I., Lee, Y. C., & Kim, W. H. (2009). The prevalence and clinical characteristics of esophageal involvement in patients with behcet's disease: A single center experience in korea. *Journal of Korean Medical Science, 24*(1), 52-56.

Yoon, W. J., Lee, S. M., Lee, S. H., & Yoon, Y. B. (2004). Gastric anisakiasis. *Gastrointestinal Endoscopy, 59*(3), 400.

Yoshida, N., Uchiyama, K., Kuroda, M., Sakuma, K., Kokura, S., Ichikawa, H., . . . Okanoue, T. (2004). Interleukin-8 expression in the esophageal mucosa of patients with gastroesophageal reflux disease. *Scandinavian Journal of Gastroenterology, 39*(9), 816-822.

Zalar, A. E., Olmos, M. A., Piskorz, E. L., & Magnanini, F. L. (2003). Esophageal motility disorders in HIV patients. *Digestive Diseases & Sciences, 48*(5), 962-967.

Zaninotto, G., Annese, V., Costantini, M., Del Genio, A., Costantino, M., Epifani, M., . . . Ancona, E. (2004). Randomized controlled trial of botulinum toxin versus laparoscopic heller myotomy for esophageal achalasia. *Annals of Surgery, 239*(3), 364-370.

Zaninotto, G., Narne, S., Costantini, M., Molena, D., Cutrone, C., Portale, G., . . . Ancona, E. (2003). Tailored approach to zenker's diverticula. *Surgical Endoscopy, 17*(1), 129-133.

Zaninotto, G., Portale, G., Costantini, M., Merigliano, S., Guirroli, E., Rizzetto, C., . . . Ancona, E. (2008). Long-term outcome of operated and unoperated epiphrenic diverticula. *Journal of Gastrointestinal Surgery, 12*(9), 1485-1490.

Zaninotto, G., Portale, G., Costantini, M., Rizzetto, C., Salvador, R., Rampado, S., . . . Ancona, E. (2006). Minimally invasive enucleation of esophageal leiomyoma. *Surgical Endoscopy, 20*(12), 1904-1908.

Zaninotto, G., Vergadoro, V., Annese, V., Costantini, M., Costantino, M., Molena, D., . . . Ancona, E. (2004). Botulinum toxin injection versus laparoscopic myotomy for the treatment of esophageal achalasia: Economic analysis of a randomized trial. *Surgical Endoscopy, 18*(4), 691-695.

Zhao, X., Sandhu, B., & Kiev, J. (2005). Colobronchial fistula as a rare complication of coloesophageal interposition: A unique treatment with a review of the medical literature. *American Surgeon, 71*(12), 1058-1059.

Zimmerman, J., & Hershcovici, T. (2008). Bowel symptoms in nonerosive gastroesophageal reflux disease: Nature, prevalence, and relation to acid reflux. *Journal of Clinical Gastroenterology, 42*(3), 261-265.

Zuber-Jerger, I., Hempel, U., Rockmann, F., & Klebl, F. (2008). Temporary stent placement in 2 cases of aortoesophageal fistula. *Gastrointestinal Endoscopy, 68*(3), 599-602.

Outcomes not relevant

Asfeldt, A. M., Steigen, S. E., Lochen, M. L., Straume, B., Johnsen, R., Bernersen, B., . . . Paulssen, E. J. (2009). The natural course of helicobacter pylori infection on endoscopic findings in a population during 17 years of follow-up: The sorreisa gastrointestinal disorder study. *European Journal of Epidemiology, 24*(10), 649-658.

Aulia, C. (2005). Prevalence of non-erosive reflux disease in pondok indah hospital: A preliminary study. *Acta Medica Indonesiana, 37*(2), 79-81.

Becher, A., & Dent, J. (2011). Systematic review: Ageing and gastro-oesophageal reflux disease symptoms, oesophageal function and reflux oesophagitis. *Alimentary Pharmacology & Therapeutics, 33*(4), 442-454. doi:http://dx.doi.org/10.1111/j.1365-2036.2010.04542.x

Bredenoord, A. J., Chial, H. J., Camilleri, M., Mullan, B. P., & Murray, J. A. (2003). Gastric accommodation and emptying in evaluation of patients with upper gastrointestinal symptoms. *Clinical Gastroenterology & Hepatology, 1*(4), 264-272.

Collings, K. L., Pierce Pratt, F., Rodriguez-Stanley, S., Bemben, M., & Miner, P. B. (2003). Esophageal reflux in conditioned runners, cyclists, and weightlifters. *Medicine & Science in Sports & Exercise, 35*(5), 730-735.

Frazzoni, M., De Micheli, E., Zentilin, P., & Savarino, V. (2004). Pathophysiological characteristics of patients with non-erosive reflux disease differ from those of patients with functional heartburn. *Alimentary Pharmacology & Therapeutics, 20*(1), 81-88.

Gad Elhak, N., Abd Elwahab, M., Nasif, W. A., Abo-Elenein, A., Abdalla, T., el-Shobary, M., . . . Ezzat, F. (2004). Prevalence of helicobacter pylori, gastric myoelectrical activity, gastric mucosal changes and dyspeptic symptoms before and after laparoscopic cholecystectomy. *Hepato-Gastroenterology, 51*(56), 485-490.

Hung, L. J., Hsu, P. I., Yang, C. Y., Wang, E. M., & Lai, K. H. (2011). Prevalence of gastroesophageal reflux disease in a general population in taiwan. *Journal of Gastroenterology & Hepatology, 26*(7), 1164-1168. doi:http://dx.doi.org/10.1111/j.1440-1746.2011.06750.x

Karita, M., Noriyasu, A., Kosako, E., Teramukai, S., & Matsumoto, S. (2003). Relationship between pepsinogen I&II and H. pylori infection considered with grade of atrophy and gastroduodenal diseases. *Digestive Diseases & Sciences, 48*(9), 1839-1845.

Kusano, M., Kouzu, T., Kawano, T., & Ohara, S. (2008). Nationwide epidemiological study on gastroesophageal reflux disease and sleep disorders in the japanese population. *Journal of Gastroenterology, 43*(11), 833-841.

Lee, J. H., Kim, N., Chung, I. K., Jo, Y. J., Seo, G. S., Kim, S. W., . . . H.pylori and GERD Study Group of Korean College of Helicobacter and Upper Gastrointestinal,Research. (2008). Clinical significance of minimal change lesions of the esophagus in a healthy korean population: A nationwide multi-center prospective study. *Journal of Gastroenterology & Hepatology, 23*(7 Pt 1), 1153-1157.

Lin, M., & Triadafilopoulos, G. (2003). Belching: Dyspepsia or gastroesophageal reflux disease?. *American Journal of Gastroenterology, 98*(10), 2139-2145.

Mishima, I., Adachi, K., Arima, N., Amano, K., Takashima, T., Moritani, M., . . . Kinoshita, Y. (2005). Prevalence of endoscopically negative and positive gastroesophageal reflux disease in the japanese. *Scandinavian Journal of Gastroenterology, 40*(9), 1005-1009.

Mothes, H., Chagaluka, G., Chiwewe, D., Malunga, M., Mwatibu, B., Wilhelm, T., & Settmacher, U. (2009). Do patients in rural malawi benefit from upper gastrointestinal endoscopy?. *Tropical Doctor, 39*(2), 73-76.

Olokoba, A. B., Olokoba, L. B., Jimoh, A. A., Salawu, F. K., Danburam, A., & Ehalaiye, B. F. (2009). Upper gastrointestinal tract endoscopy indications in northern nigeria. *Jcpsp, Journal of the College of Physicians & Surgeons - Pakistan, 19*(5), 327-328.

Pacheco-Galvan, A., Hart, S. P., & Morice, A. H. (2011). Relationship between gastro-oesophageal reflux and airway diseases: The airway reflux paradigm. *Archivos De Bronconeumologia, 47*(4), 195-203.

Park, S., Chun, H. J., Keum, B., Uhm, C. S., Baek, S. K., Jung, K. Y., & Lee, S. J. (2010). An electron microscopic study--correlation of gastroesophageal reflux disease and laryngopharyngeal reflux. *Laryngoscope, 120*(7), 1303-1308.

Shim, K. N., Hong, S. J., Sung, J. K., Park, K. S., Kim, S. E., Park, H. S., . . . pylori and GERD Study Group of Korean College of Helicobacter and Upper Gastrointestinal,Research. (2009). Clinical spectrum of reflux esophagitis among 25,536 koreans who underwent a health check-up: A nationwide multicenter prospective, endoscopy-based study. *Journal of Clinical Gastroenterology, 43*(7), 632-638.

Straumann, A., Spichtin, H. P., Bucher, K. A., Heer, P., & Simon, H. U. (2004). Eosinophilic esophagitis: Red on microscopy, white on endoscopy. *Digestion, 70*(2), 109-116.

Studies Related to Harms and Complications

Study design not relevant

Bahadur, S., Fayyaz, M., & Mehboob, S. (2006). Salivary gland swelling developing after endoscopy: "anesthesia mumps". *Gastrointestinal Endoscopy, 63*(2), 345-347.

Brenke, D., Wanzar, I., & Will, U. (2006). Esophageal intramural pseudodiverticulosis with symptomatic stricture: Mediastinitis and papillomatosis as a complication of endoscopic intervention. *Endoscopy, 38*(7), 764.

Chiu, P. W., & Sung, J. J. (2011). Endoscopic resection for early gastric cancer: One piece is better than dash to pieces. *Gastrointestinal Endoscopy, 74*(3), 494-495.

Dahshan, A. (2006). "Endoscopy blues". *Journal of Clinical Gastroenterology, 40*(5), 449-450.

Green, B. T., & Tendler, D. A. (2005). Cerebral air embolism during upper endoscopy: Case report and review. *Gastrointestinal Endoscopy, 61*(4), 620-623.

Ha, J. F., Allanson, E., & Chandraratna, H. (2009). Air embolism in gastroscopy. *International Journal of Surgery, 7*(5), 428-430.

Pallotta, S., Manes, G., Ferrara, E. C., Trabucchi, E., Pace, F., & Bianchi Porro, G. (2009). Bilateral pneumothorax and pneumomediastinum during upper endoscopy: The role of gastric perforation and of cardiopulmonary resuscitation maneuvers. *Endoscopy, 41*(Suppl 2), E97.

Payeras, G., Piqueras, J., & Moreno Vara, J. (2007). Reply to C. eisenbach et al. *Endoscopy, 39*(12), 1106.

Rewari, V., & Lakhe, S. (2007). Acute bilateral submandibular gland swelling during rigid oesophagoscopy under anaesthesia. *European Journal of Anaesthesiology, 24*(8), 728-729.

Sayilir, A., Kurt, M., Ibis, M., Kekilli, M., Onal, I. K., & Sasmaz, N. (2009). Transient global amnesia following upper gastrointestinal endoscopy without premedication. *Gastroenterology Nursing, 32*(5), 362.

Tam, W. Y., & Bertholini, D. (2007). Tension pneumoperitoneum, pneumomediastinum, subcutaneous emphysema and cardiorespiratory collapse following gastroscopy. *Anaesthesia & Intensive Care, 35*(2), 307-309.

Vakil, N. (2006). Pretreatment endoscopy--pro & contra: Is endoscopy needed before treatment in all patients with gastroesophageal reflux disease?. *Endoscopy, 38*(3), 276-278.

Yen, H. H., & Chen, Y. Y. (2011). Pneumomediastinum, pneumoperitoneum, pneumoretroperitoneum, and subcutaneous emphysema after ultrathin endoscopy. *Endoscopy, 43*(Suppl 2 UCTN), E49-50.

Population not relevant

Chao, H. C., Luo, C. C., & Wang, C. J. (2011). Elimination of postoperative pyloric stricture by endoscopic electrocauterization and balloon dilatation in an infant with congenital antral web. *Pediatrics & Neonatology, 52*(2), 106-109.

Francis, D. L., & Katzka, D. A. (2010). Achalasia: Update on the disease and its treatment. *Gastroenterology, 139*(2), 369-374.

Gul, N., & Quadri, M. (2011). The clinical diagnostic reasoning process determining the use of endoscopy in diagnosing peptic ulcer disease. *Jcpsp, Journal of the College of Physicians & Surgeons - Pakistan, 21*(9), 548-552.

Jimenez, S. G., & Catto-Smith, A. G. (2008). Impact of day-case gastroscopy on children and their families. *Journal of Gastroenterology & Hepatology, 23*(3), 379-384.

Legrand, M., Denis, J., Drouhin, F., Lecuyer, L., Plat, R., Van De Louw, A., & Thierry, S. (2007). Bacterial meningitis following upper gastrointestinal endoscopy in patients with cirrhosis - bear it in mind. *Endoscopy, 39*(Suppl 1), E96.

Leopard, D., Fishpool, S., & Winter, S. (2011). The management of oesophageal soft food bolus obstruction: A systematic review. *Annals of the Royal College of Surgeons of England, 93*(6), 441-444.

Morimoto, S., Kido, E., Higashi, M., Sumitani, N., Takagishi, H., Kakimoto, S., . . . Yasui, A. (2010). Peritonitis after gynecological and gastroscopic examinations in a peritoneal dialysis patient. *Clinical Nephrology, 74*(6), 491-492.

Mumtaz, K., Ismail, F. W., Jafri, W., Abid, S., Hamid, S., Shah, H., & Dhakam, S. (2008). Safety and utility of oesophago-gastro-duodenoscopy in acute myocardial infarction. *European Journal of Gastroenterology & Hepatology, 20*(1), 51-55.

Pace, F., Manes, G., Conio, M., & Bianchi Porro, G. (2006). Pretreatment endoscopy--pro & contra: Endoscopy is needed before treatment in all patients with gastroesophageal reflux disease. *Endoscopy, 38*(3), 271-275.

Pandolfi, M., Rea, R., Martino, M., Crucitti, P., Di Matteo, F. M., Costamagna, G., & Gabbrielli, A. (2s009). Pneumoperitoneum caused by gastroscopy in a jaundiced patient treated endoscopically after initial percutaneous approach. *Endoscopy, 41*(Suppl 2), E16.

Schreiner, M. A., & Fennerty, M. B. (2010). Endoscopy in the obese patient. *Gastroenterology Clinics of North America, 39*(1), 87-97.

Shim, L. S., & Grehan, M. (2010). Education and imaging. gastrointestinal: Oesophageal perforation during endoscopy for food impaction in eosinophilic oesophagitis. *Journal of Gastroenterology & Hepatology, 25*(2), 428.

Thomson, A., Tye-Din, J., Tonga, S., Scott, J., McLaren, C., Pavli, P., & Lomas, F. (2007). Aspiration in the context of upper gastrointestinal endoscopy. *Canadian Journal of Gastroenterology, 21*(4), 223-225.

Tsao, G. J., & Damrose, E. J. (2010). Complications of esophagoscopy in an academic training program. *Otolaryngology - Head & Neck Surgery, 142*(4), 500-504.

Yachimski, P., & Hur, C. (2009). Upper endoscopy in patients with acute myocardial infarction and upper gastrointestinal bleeding: Results of a decision analysis. *Digestive Diseases & Sciences, 54*(4), 701-711.

Intervention not relevant

Abdallah, H. Y., & Shah, S. A. (2002). Methemoglobinemia induced by topical benzocaine: A warning for the endoscopist. *Endoscopy, 34*(9), 730-734.

Abdo-Francis, J. M., Sobrino-Cossio, S. R., & Hernandez-Guerrero, A. (2011). Gastrointestinal stent. *Cirugia y Cirujanos, 79*(2), 202-208.

Abdullah, M. (2011). Home-made ligator for endoscopic ligation of esophageal varices. *Acta Medica Indonesiana, 43*(1), 1-3.

Abe, H., Murakami, K., Satoh, S., Sato, R., Kodama, M., Arita, T., & Fujioka, T. (2005). Influence of bile reflux and helicobacter pylori infection on gastritis in the remnant gastric mucosa after distal gastrectomy. *Journal of Gastroenterology, 40*(6), 563-569.

Abe, S., Kondo, H., Sumiyoshi, T., Mizushima, T., Sugawara, M., Shimizu, Y., & Okushiba, S. (2009). Treatment strategy for early gastric cancer with the risk of pyloric stenosis after endoscopic resection. *Endoscopy, 41*(12), 1101-1102.

Abe, Y., Inamori, M., Iida, H., Endo, H., Akiyama, T., Yoneda, K., . . . Nakajima, A. (2009). Clinical characteristics of patients with gastric perforation following endoscopic submucosal resection for gastric cancer. *Hepato-Gastroenterology, 56*(91-92), 921-924.

Adisen, E., Eroglu, N., Oztas, M., & Gurer, M. A. (2007). A rare cause of facial purpura: Endoscopy. *Endoscopy, 39*(Suppl 1), E216.

Adrales, G. L., Gandsas, A., Mastrangelo, M. J.,Jr, & Schwartz, R. (2003). An introduction to laparoscopic gastric resection. *Current Surgery, 60*(4), 385-389.

Aftab, A. R., Donnellan, F., Zeb, F., & Courtney, G. (2009). The clinical significance of juxtapapillary duodenal diverticula identified at ERCP. *Gastrointestinal Endoscopy, 69*(6), 1197.

Ahmad, Z., Repanos, C., & Keogh, K. (2010). Complication of oesophagoscopy and anticoagulation. *Annals of the Royal College of Surgeons of England, 92*(3), 268.

Ahmed, A. R., Rickards, G., Messing, S., Husain, S., Johnson, J., Boss, T., & O'Malley, W. (2009). Roux limb obstruction secondary to constriction at transverse mesocolon rent after laparoscopic roux-en-Y gastric bypass. *Surgery for Obesity & Related Diseases, 5*(2), 194-198.

Ahmed, S., Fontaine, J. P., & Ng, T. (2010). Pancreatic herniation after transhiatal esophagectomy. *Annals of Thoracic Surgery, 89*(1), 308-309.

Ahn, J. Y., Choi, K. D., Choi, J. Y., Kim, M. Y., Lee, J. H., Choi, K. S., . . . Kim, J. H. (2011). Transnasal endoscope-assisted endoscopic submucosal dissection for gastric adenoma and early gastric cancer in the pyloric area: A case series. *Endoscopy, 43*(3), 233-235.

Ahn, J. Y., Jung, H. Y., Choi, K. D., Choi, J. Y., Kim, M. Y., Lee, J. H., . . . Park, Y. S. (2011). Endoscopic and oncologic outcomes after endoscopic resection for early gastric cancer: 1370 cases of absolute and extended indications. *Gastrointestinal Endoscopy, 74*(3), 485-493.

Akagi, T., Shiraishi, N., Hiroishi, K., Etoh, T., Yasuda, K., & Kitano, S. (2010). Case series of intra-abdominal adhesions induced by artificial ulceration after endoscopic submucosal dissection before additional laparoscopic gastrectomy. *Gastrointestinal Endoscopy, 72*(2), 438-443.

Albuquerque, W., & Arantes, V. (2004). Large gastric perforation after endoscopic mucosal resection treated by application of metallic clips (video). *Endoscopy, 36*(8), 752-753.

Aldridge, R. D., MacKinlay, G. A., & Aldridge, R. B. (2007). Choice of incision: The experience and evolution of surgical management of infantile hypertrophic pyloric stenosis. *Journal of Laparoendoscopic & Advanced Surgical Techniques.Part A, 17*(1), 131-136.

Alvarez Herrero, L., Pouw, R. E., van Vilsteren, F. G., ten Kate, F. J., Visser, M., Seldenrijk, C. A., . . . Bergman, J. J. (2011). Safety and efficacy of multiband mucosectomy in 1060 resections in barrett's esophagus. *Endoscopy, 43*(3), 177-183.

Arantes, V., Albuquerque, W., Benfica, E., Duarte, D. L., Lima, D., Vilela, S., . . . Kumar, A. (2010). Submucosal injection of 0.4% hydroxypropyl methylcellulose facilitates endoscopic mucosal resection of early gastrointestinal tumors. *Journal of Clinical Gastroenterology, 44*(9), 615-619.

Araujo, S. E., Degrandi, R., & Martins, J. A. (2007). Fatal complication of gastric tear at diagnostic colonoscopy with deep sedation. *Endoscopy, 39*(Suppl 1), E75-6.

Arias, I. E., Radulescu, M., Stiegeler, R., Singh, J. P., Martinez, P., Ramirez, A., . . . Rosenthal, R. J. (2009). Diagnosis and treatment of megaesophagus after adjustable gastric banding for morbid obesity. *Surgery for Obesity & Related Diseases, 5*(2), 156-159.

Asakuma, Y., Kudo, M., Matsui, S., Okada, M., Kawasaki, M., Umehara, Y., . . . Kitai, S. (2009). Comparison of an ecabet sodium and proton pump inhibitor (PPI) combination therapy with PPI alone in the treatment of endoscopic submucosal dissection (ESD)--induced ulcers in early gastric cancer: Prospective randomized study. *Hepato-Gastroenterology, 56*(94-95), 1270-1273.

Atallah, F. N., Riu, B. M., Nguyen, L. B., Seguin, P. O., & Fourcade, O. A. (2004). Boerhaave's syndrome after postoperative vomiting. *Anesthesia & Analgesia, 98*(4), 1164-1166.

Atkins, B. Z., Shah, A. S., Hutcheson, K. A., Mangum, J. H., Pappas, T. N., Harpole, D. H.,Jr, & D'Amico, T. A. (2004). Reducing hospital morbidity and mortality following esophagectomy. *Annals of Thoracic Surgery, 78*(4), 1170-1176.

Attwood, S. E., Lewis, C. J., Caplin, S., Hemming, K., & Armstrong, G. (2003). Argon beam plasma coagulation as therapy for high-grade dysplasia in barrett's esophagus. *Clinical Gastroenterology & Hepatology, 1*(4), 258-263.

Aumeran, C., Poincloux, L., Souweine, B., Robin, F., Laurichesse, H., Baud, O., . . . Traore, O. (2010). Multidrug-resistant klebsiella pneumoniae outbreak after endoscopic retrograde cholangiopancreatography. *Endoscopy, 42*(11), 895-899.

Avery, C., Shenoy, S., Shetty, S., Siegmund, C., Mazhar, I., & Taub, N. (2008). The prospective experience of a maxillofacial surgeon with the percutaneous endoscopic gastrostomy technique. *International Journal of Oral & Maxillofacial Surgery, 37*(2), 140-148.

Avgerinos, D. V., Llaguna, O. H., Lo, A. Y., Voli, J., & Leitman, I. M. (2009). Management of endoscopic retrograde cholangiopancreatography: Related duodenal perforations. *Surgical Endoscopy, 23*(4), 833-838.

Awais, O., Luketich, J. D., Tam, J., Irshad, K., Schuchert, M. J., Landreneau, R. J., & Pennathur, A. (2008). Roux-en-Y near esophagojejunostomy for intractable gastroesophageal reflux after antireflux surgery. *Annals of Thoracic Surgery, 85*(6), 1954-1959.

Balazs, A., Kupcsulik, P. K., & Galambos, Z. (2008). Esophagorespiratory fistulas of tumorous origin. non-operative management of 264 cases in a 20-year period. *European Journal of Cardio-Thoracic Surgery, 34*(5), 1103-1107.

Ballesta Lopez, C., Ruggiero, R., Poves, I., Bettonica, C., & Procaccini, E. (2002). The contribution of laparoscopy to the treatment of gastric cancer. *Surgical Endoscopy, 16*(4), 616-619.

Ballesta-Lopez, C., Poves, I., Cabrera, M., Almeida, J. A., & Macias, G. (2005). Learning curve for laparoscopic roux-en-Y gastric bypass with totally hand-sewn anastomosis: Analysis of first 600 consecutive patients. *Surgical Endoscopy, 19*(4), 519-524.

Baltz, J. G., Argo, C. K., Al-Osaimi, A. M., & Northup, P. G. (2010). Mortality after percutaneous endoscopic gastrostomy in patients with cirrhosis: A case series. *Gastrointestinal Endoscopy, 72*(5), 1072-1075.

Barr, H., Stone, N., & Rembacken, B. (2005). Endoscopic therapy for barrett's oesophagus. *Gut, 54*(6), 875-884.

Basha, S. I., & Durham, L. H. (2002). An unusual case of dysphagia: Retained groningen valve. *Journal of Laryngology & Otology, 116*(5), 392-394.

Basso, N., Casella, G., Rizzello, M., Abbatini, F., Soricelli, E., Alessandri, G., . . . Fantini, A. (2011). Laparoscopic sleeve gastrectomy as first stage or definitive intent in 300 consecutive cases. *Surgical Endoscopy, 25*(2), 444-449.

Baudet, J. S., Salata, H., Soler, M., Castro, V., Diaz-Bethencourt, D., Vela, M., . . . Aviles, J. (2007). Hyperplastic gastric polyps after argon plasma coagulation treatment of gastric antral vascular ectasia (GAVE). *Endoscopy, 39*(Suppl 1), E320.

Baumann, T., Grueneberger, J., Pache, G., Kuesters, S., Marjanovic, G., Kulemann, B., . . . Karcz, W. K. (2011). Three-dimensional stomach analysis with computed tomography after laparoscopic sleeve gastrectomy: Sleeve dilation and thoracic migration. *Surgical Endoscopy, 25*(7), 2323-2329.

Behrns, K. E. (2010). Gastric remnant cancer: Is elimination of the bug the answer?: Comment on "screening of helicobacter pylori infection after gastrectomy for cancer or peptic ulcer". *Archives of Surgery, 145*(10), 967.

Bell, R. C., & Cadiere, G. B. (2011). Transoral rotational esophagogastric fundoplication: Technical, anatomical, and safety considerations. *Surgical Endoscopy, 25*(7), 2387-2399.

Benjamin, S. B., & Maher, K. A. (2007). Minimizing endoscopic complications--gastric and esophageal physiologic testing. *Gastrointestinal Endoscopy Clinics of North America, 17*(1), 41-46.

Bennett, C., Wang, Y., & Pan, T. (2009). Endoscopic mucosal resection for early gastric cancer. *Cochrane Database of Systematic Reviews,* (4), 004276.

Bergman, J. J. (2005). Endoscopic treatment of high-grade intraepithelial neoplasia and early cancer in barrett oesophagus. *Best Practice & Research in Clinical Gastroenterology, 19*(6), 889-907.

Binkert, C. A., & Petersen, B. D. (2002). Two fatal complications after parallel tracheal-esophageal stenting. *Cardiovascular & Interventional Radiology, 25*(2), 144-147.

Blacker, D. J., Wijdicks, E. F., & McClelland, R. L. (2003). Stroke risk in anticoagulated patients with atrial fibrillation undergoing endoscopy. *Neurology, 61*(7), 964-968.

Blomberg, J., Lagergren, P., Martin, L., Mattsson, F., & Lagergren, J. (2010). Novel approach to antibiotic prophylaxis in percutaneous endoscopic gastrostomy (PEG): Randomised controlled trial. *BMJ, 341*, 3115. doi:http://dx.doi.org/10.1136/bmj.c3115

Bloomston, M., & Rosemurgy, A. S. (2002). Selective application of fundoplication during laparoscopic heller myotomy ensures favorable outcomes. *Surgical Laparoscopy, Endoscopy & Percutaneous Techniques, 12*(5), 309-315.

Bloomston, M., Serafini, F., Boyce, H. W., & Rosemurgy, A. S. (2002). The "learning curve" in videoscopic heller myotomy. *Journal of the Society of Laparoendoscopic Surgeons, 6*(1), 41-47.

Bonavina, L. (2008). Comments on the publication "effect of pyloric drainage procedures on gastric passage and bile reflux after esophagectomy with gastric conduit reconstruction by palmes et al.". *Langenbecks Archives of Surgery, 393*(1), 117-118.

Bonavina, L., Bona, D., Saino, G., & Clemente, C. (2007). Pseudoachalasia occurring after laparoscopic nissen fundoplication and crural mesh repair. *Langenbecks Archives of Surgery, 392*(5), 653-656.

Booth, M. I., Jones, L., Stratford, J., & Dehn, T. C. (2002). Results of laparoscopic nissen fundoplication at 2-8 years after surgery. *British Journal of Surgery, 89*(4), 476-481.

Borsaru, A. D., & Nandurkar, D. (2007). Intramural duodenal haematoma presenting as a complication after endoscopic biopsy. *Australasian Radiology, 51*(4), 378-380.

Boubnova, J., Hery, G., Ughetto, F., Charpentier, A., Guys, J. M., & de Lagausie, P. (2009). Laparoscopic total esophagogastric dissociation. *Journal of Pediatric Surgery, 44*(10), e1-3.

Bowers, S. P., Mattar, S. G., Waring, P. J., Galloway, K., Nasir, A., Pascal, R., & Hunter, J. G. (2003). KTP laser ablation of barrett's esophagus after anti-reflux surgery results in long-term loss of intestinal metaplasia. potassium-titanyl-phosphate. *Surgical Endoscopy, 17*(1), 49-54.

Bracale, U., Marzano, E., Nastro, P., Barone, M., Cuccurullo, D., Cutini, G., . . . Pignata, G. (2010). Side-to-side esophagojejunostomy during totally laparoscopic total gastrectomy for malignant disease: A multicenter study. *Surgical Endoscopy, 24*(10), 2475-2479.

Brega Massone, P. P., Infante, M., Valente, M., Conti, B., Carboni, U., & Cataldo, I. (2002). Gastrobronchial fistula repair followed by esophageal leak--rescue by transesophageal drainage of the pleural cavity. *Thoracic & Cardiovascular Surgeon, 50*(2), 113-116.

Brotherton, A. M., & Carter, B. (2007). Percutaneous endoscopic gastrostomy feeding in nursing homes: Relatives' perceptions. *Clinical Nursing Research, 16*(4), 350-369.

Brower, V. (2009). Laparoscopic versus open surgery in cancer: New studies add data to debate. *Journal of the National Cancer Institute, 101*(14), 982-983.

Brown, S., McHugh, K., Ledermann, S., & Pierro, A. (2007). CT findings in gastrocolic fistula following percutaneous endoscopic gastrostomy. *Pediatric Radiology, 37*(2), 229-231.

Burdick, J. S., Garza, A. A., Magee, D. J., Dykes, C., & Jeyarajah, R. (2002). Endoscopic management of afferent loop syndrome of malignant etiology. *Gastrointestinal Endoscopy, 55*(4), 602-605.

Burton, P. R., Brown, W. A., Laurie, C., Hebbard, G., & O'Brien, P. E. (2010). Criteria for assessing esophageal motility in laparoscopic adjustable gastric band patients: The importance of the lower esophageal contractile segment. *Obesity Surgery, 20*(3), 316-325.

Burton, P. R., Brown, W. A., Laurie, C., Korin, A., Yap, K., Richards, M., . . . O'Brien, P. E. (2010). Pathophysiology of laparoscopic adjustable gastric bands: Analysis and classification using high-resolution video manometry and a stress barium protocol. *Obesity Surgery, 20*(1), 19-29.

Buscaglia, J. M., Jayaraman, V., & Nagula, S. (2011). Temporary use of a new fully-covered self-expanding metal stent for the management of post-esophagectomy strictures. *Digestive Endoscopy, 23*(2), 187-189. doi:http://dx.doi.org/10.1111/j.1443-1661.2010.01074.x

Campbell, B. T., McVay, M. R., Lerer, T. J., Lowe, N. J., Smith, S. D., & Kokoska, E. R. (2007). Ghosts in the machine: A multi-institutional comparison of laparoscopic and open pyloromyotomy. *Journal of Pediatric Surgery, 42*(12), 2026-2029.

Campos, G. M., Jablons, D., Brown, L. M., Ramirez, R. M., Rabl, C., & Theodore, P. (2010). A safe and reproducible anastomotic technique for minimally invasive ivor lewis oesophagectomy: The circular-stapled anastomosis with the trans-oral anvil. *European Journal of Cardio-Thoracic Surgery, 37*(6), 1421-1426.

Carbonell, A. M., & Maher, J. W. (2006). Laparoscopic transgastric removal of an eroded angelchik prosthesis. *American Surgeon, 72*(8), 724-726.

Cariani, S., & Amenta, E. (2007). Three-year results of roux-en-Y gastric bypass-on-vertical banded gastroplasty: An effective and safe procedure which enables endoscopy and X-ray study of the stomach and biliary tract. *Obesity Surgery, 17*(10), 1312-1318.

Carvalho, G. L., Barros, C. B., Okazaki, M., Novaes, M. L., Albuquerque, P. C., Almeida, N. C., . . . Coelho, R. M. (2009). An improved intragastric balloon procedure using a new balloon: Preliminary analysis of safety and efficiency. *Obesity Surgery, 19*(2), 237-242.

Chak, A., Singh, R., & Linden, P. A. (2011). Covered stents for the treatment of life-threatening cervical esophageal anastomotic leaks. *Journal of Thoracic & Cardiovascular Surgery, 141*(3), 843-844.

Champion, J. K. (2003). Thoracoscopic belsey fundoplication with 5-year outcomes. *Surgical Endoscopy, 17*(8), 1212-1215.

Chan, D. C., Fan, Y. M., Lin, C. K., Chen, C. J., Chen, C. Y., & Chao, Y. C. (2007). Roux-en-Y reconstruction after distal gastrectomy to reduce enterogastric reflux and helicobacter pylori infection. *Journal of Gastrointestinal Surgery, 11*(12), 1732-1740.

Chandu, A., Smith, A. C., & Douglas, M. (2003). Percutaneous endoscopic gastrostomy in patients undergoing resection for oral tumors: A retrospective review of complications and outcomes. *Journal of Oral & Maxillofacial Surgery, 61*(11), 1279-1284.

Chang, C. C., Lee, I. L., Chen, P. J., Wang, H. P., Hou, M. C., Lee, C. T., . . . Lin, J. T. (2009). Endoscopic submucosal dissection for gastric epithelial tumors: A multicenter study in taiwan. *Journal of the Formosan Medical Association, 108*(1), 38-44.

Chang, C. Y., Tu, C. H., Chiang, T. S., & Wang, H. P. (2007). Acute gastric ulcer associated with gamma knife treatment (conformal stereotactic radiotherapy) of recurrent hepatocellular carcinoma. *Endoscopy, 39*(Suppl 1), E154.

Chao, H. H., & Chao, T. C. (2008). Perforation of the duodenum by an ingested toothbrush. *World Journal of Gastroenterology, 14*(27), 4410-4412.

Chaudhary, K. A., Smith, O. J., Cuddy, P. G., & Clarkston, W. K. (2002). PEG site infections: The emergence of methicillin resistant staphylococcus aureus as a major pathogen. *American Journal of Gastroenterology, 97*(7), 1713-1716.

Chen, C. C., Lee, T. C., Liu, K. L., Lin, J. T., & Wang, H. P. (2007). Pus from the pylorus: An unusual endoscopic finding suggestive of periduodenal abscess. *Endoscopy, 39*(Suppl 1), E235-6.

Chen, D., Barber, C., McLoughlin, P., Thavaneswaran, P., Jamieson, G. G., & Maddern, G. J. (2009). Systematic review of endoscopic treatments for gastro-oesophageal reflux disease. *British Journal of Surgery, 96*(2), 128-136.

Chen, M. J., Wu, M. S., Lin, J. T., Chang, K. Y., Chiu, H. M., Liao, W. C., . . . Lee, Y. C. (2009). Gastroesophageal reflux disease and sleep quality in a chinese population. *Journal of the Formosan Medical Association, 108*(1), 53-60.

Chen, P. S., Cheng, H. C., & Sheu, B. S. (2008). Diffuse intramural duodenal hematoma complicated by lethal necrotizing pancreatitis after endoscopic duodenal biopsy. *Endoscopy, 40*(Suppl 2), E143.

Cheng, J. Y., Lo, W. C., Liang, H. H., & Kun, I. H. (2007). Migration of ventriculoperitoneal shunt into the stomach, presenting with gastric bleeding. *Acta Neurochirurgica, 149*(12), 1269-1270.

Cheon, J. H., Kim, J. H., Lee, S. K., Kim, T. I., Kim, W. H., & Lee, Y. C. (2008). Helicobacter pylori eradication therapy may facilitate gastric ulcer healing after endoscopic mucosal resection: A prospective randomized study. *Helicobacter, 13*(6), 564-571.

Chin-Lenn, L., Ryan, C., Skene, A., & Mianroodi, A. A. (2009). Proximal esophageal amyloidoma presenting with life-threatening dysphagia. *Ear, Nose, & Throat Journal, 88*(6), E4.

Chiu, P. W., Chan, K. F., Lee, Y. T., Sung, J. J., Lau, J. Y., & Ng, E. K. (2008). Endoscopic submucosal dissection used for treating early neoplasia of the foregut using a combination of knives. *Surgical Endoscopy, 22*(3), 777-783.

Chiu, Y. C., Hsu, C. C., Chiu, K. W., Chuah, S. K., Changchien, C. S., Wu, K. L., & Chou, Y. P. (2004). Factors influencing clinical applications of endoscopic balloon dilation for benign esophageal strictures. *Endoscopy, 36*(7), 595-600.

Choi, I. J., Kim, C. G., Chang, H. J., Kim, S. G., Kook, M. C., & Bae, J. M. (2005). The learning curve for EMR with circumferential mucosal incision in treating intramucosal gastric neoplasm. *Gastrointestinal Endoscopy, 62*(6), 860-865.

Chong, V. H. (2004). Gastric outlet obstruction caused by gastrostomy tube balloon. *Indian Journal of Gastroenterology, 23*(2), 80.

Chrysos, E., Tsiaoussis, J., Zoras, O. J., Athanasakis, E., Mantides, A., Katsamouris, A., & Xynos, E. (2003). Laparoscopic surgery for gastroesophageal reflux disease patients with impaired esophageal peristalsis: Total or partial fundoplication?. *Journal of the American College of Surgeons, 197*(1), 8-15.

Chuah, S. K., Hu, T. H., Wu, K. L., Kuo, C. M., Fong, T. V., Lee, C. M., & Changchien, C. S. (2008). Endoscope-guided pneumatic dilatation of esophageal achalasia without fluoroscopy is another safe and effective treatment option: A report of taiwan. *Surgical Laparoscopy, Endoscopy & Percutaneous Techniques, 18*(1), 8-12.

Chung, J. C., Chu, C. W., Cho, G. S., Shin, E. J., Lim, C. W., Kim, H. C., & Song, O. P. (2010). Management and outcome of gastrointestinal stromal tumors of the duodenum. *Journal of Gastrointestinal Surgery, 14*(5), 880-883.

Coda, S., Oda, I., Gotoda, T., Yokoi, C., Kikuchi, T., & Ono, H. (2009). Risk factors for cardiac and pyloric stenosis after endoscopic submucosal dissection, and efficacy of endoscopic balloon dilation treatment. *Endoscopy, 41*(5), 421-426.

Coda, S., Trentino, P., Antonellis, F., Porowska, B., Gossetti, F., Ruberto, F., . . . Gotoda, T. (2010). A western single-center experience with endoscopic submucosal dissection for early gastrointestinal cancers. *Gastric Cancer, 13*(4), 258-263.

Cohen, J. T., Postma, G. N., & Koufman, J. A. (2003). Epiphrenic diverticulum. *Ear, Nose, & Throat Journal, 82*(5), 354-355.

Collins, C., Arumugasamy, M., Larkin, J., Martin, S., & O'Sullivan, G. C. (2002). Thoracoscopic repair of instrumental perforation of the oesophagus: First report. *Irish Journal of Medical Science, 171*(2), 68-70.

Con, S. A., Oda, I., Suzuki, H., Kusano, C., Kiriyama, S., & Gotoda, T. (2009). Risk of perforation during endoscopic submucosal dissection using latest insulation-tipped diathermic knife (IT knife-2). *Endoscopy, 41*(Suppl 2), E69-70.

Contini, S., Garatti, M., Swarray-Deen, A., Depetris, N., Cecchini, S., & Scarpignato, C. (2009). Corrosive oesophageal strictures in children: Outcomes after timely or delayed dilatation. *Digestive & Liver Disease, 41*(4), 263-268.

Cooke, D. T., Lin, G. C., Lau, C. L., Zhang, L., Si, M. S., Lee, J., . . . Orringer, M. B. (2009). Analysis of cervical esophagogastric anastomotic leaks after transhiatal esophagectomy: Risk factors, presentation, and detection. *Annals of Thoracic Surgery, 88*(1), 177-184.

Coriat, R., Leblanc, S., Pommaret, E., Chryssostalis, A., Prat, F., & Chaussade, S. (2010). Transmural air leak following endoscopic submucosal dissection: A non-useful computed tomography finding. *Endoscopy, 42*(12), 1117.

Costi, R., Himpens, J., Bruyns, J., & Cadiere, G. B. (2004). Totally laparoscopic transhiatal esophago-gastrectomy without thoracic or cervical access. the least invasive surgery for adenocarcinoma of the cardia?. *Surgical Endoscopy, 18*(4), 629-632.

Crumley, A. B., Going, J. J., McEwan, K., McKernan, M., Abela, J. E., Shearer, C. J., . . . Stuart, R. C. (2011). Endoscopic mucosal resection for gastroesophageal cancer in a U.K. population. long-term follow-up of a consecutive series. *Surgical Endoscopy, 25*(2), 543-548.

Csendes, A. (2003). The significance of pH and manometric testing after laparoscopic fundoplication. *Surgical Endoscopy, 17*(6), 997.

Csendes, A., Burdiles, P., Braghetto, I., Korn, O., Diaz, J. C., & Rojas, J. (2002). Early and late results of the acid suppression and duodenal diversion operation in patients with barrett's esophagus: Analysis of 210 cases. *World Journal of Surgery, 26*(5), 566-576.

Csendes, A., Burdiles, P., & Korn, O. (2005). Laparoscopic nissen fundoplication: The "right posterior" approach. *Journal of Gastrointestinal Surgery, 9*(7), 985-991.

Csendes, A., Smok, G., & Burgos, A. M. (2008). Behavior of the infection by helicobacter pylori of the gastric remnant after subtotal gastrectomy and roux-en-Y anastomosis for benign diseases. *Journal of Gastrointestinal Surgery, 12*(9), 1508-1511.

Dagli, S. U., Beyazit, Y., Kurt, M., Onal, I. K., & Oztas, E. (2010). Esophageal hematoma mimicking downhill varices: Resolution after esomeprazole therapy. *Gastroenterology Nursing, 33*(3), 236-237.

Dai, Y., Chopra, S. S., Kneif, S., & Hunerbein, M. (2011). Management of esophageal anastomotic leaks, perforations, and fistulae with self-expanding plastic stents. *Journal of Thoracic & Cardiovascular Surgery, 141*(5), 1213-1217.

Dallal, R. M., Bailey, L., & Nahmias, N. (2007). Back to basics--clinical diagnosis in bariatric surgery. routine drains and upper GI series are unnecessary. *Surgical Endoscopy, 21*(12), 2268-2271.

Daniel, M., Kamani, T., Nogueira, C., Jaberoo, M. C., Conboy, P., Johnston, M., & Bradley, P. (2010). Perforation after rigid pharyngo-oesophagoscopy: When do symptoms and signs develop?. *Journal of Laryngology & Otology, 124*(2), 171-174.

Daoud, E. G. (2010). Radiofrequency-induced esophageal injury: A thin barrier of protection. *Heart Rhythm, 7*(9), 1231-1232.

Dapri, G., Himpens, J., Buset, M., Vasilikostas, G., Ntounda, R., & Cadiere, G. B. (2009). Video. laparoscopic transgastric access to the common bile duct after roux-en-Y gastric bypass. *Surgical Endoscopy, 23*(7), 1646-1648.

Date, R. S., Makar, R., Das, N., & Panesar, K. J. (2003). Liver tear: A previously unreported serious complication of endoscopic balloon dilation for benign gastric outlet obstruction. *Endoscopy, 35*(5), 461.

David, E. A., Kim, M. P., & Blackmon, S. H. (2011). Esophageal salvage with removable covered self-expanding metal stents in the setting of intrathoracic esophageal leakage. *American Journal of Surgery, 202*(6), 796-801.

D'Cunha, J., Rueth, N. M., Groth, S. S., Maddaus, M. A., & Andrade, R. S. (2011). Esophageal stents for anastomotic leaks and perforations. *Journal of Thoracic & Cardiovascular Surgery, 142*(1), 39-46.e1.

De Caro, G., Pagano, N., Malesci, A., Hervoso, C., Danese, S., Romeo, F., . . . Repici, A. (2009). Endoclipping for gastric perforation secondary to second session of EMRC in locally residual early gastric cancer: A case report. *Digestive & Liver Disease, 41*(7), e32-4.

de Hoyos, A., Litle, V. R., & Luketich, J. D. (2005). Minimally invasive esophagectomy. *Surgical Clinics of North America, 85*(3), 631-647.

de Jong, K., Mathus-Vliegen, E. M., Veldhuyzen, E. A., Eshuis, J. H., & Fockens, P. (2010). Short-term safety and efficacy of the trans-oral endoscopic restrictive implant system for the treatment of obesity. *Gastrointestinal Endoscopy, 72*(3), 497-504.

Del Rio, P., Dell'Abate, P., Soliani, P., Arcuri, M. F., Ghirarduzzi, A., & Sianesi, M. (2006). Complications of percutaneous endoscopic gastrostomy: A surgical experience. *Giornale Di Chirurgia, 27*(10), 388-391.

Dellon, E. S., Gibbs, W. B., Rubinas, T. C., Fritchie, K. J., Madanick, R. D., Woosley, J. T., & Shaheen, N. J. (2010). Esophageal dilation in eosinophilic esophagitis: Safety and predictors of clinical response and complications. *Gastrointestinal Endoscopy, 71*(4), 706-712.

DePaula, A. L., Macedo, A. L., Cernea, C. R., Schraibman, V., Pinus, J., Milanez, J. R., . . . Nishio, S. (2006). Reconstruction of upper digestive tract: Reducing morbidity by laparoscopic pull-up. *Otolaryngology - Head & Neck Surgery, 135*(5), 710-713.

Deprez, P. H., Aouattah, T., & Piessevaux, H. (2006). Endoscopic removal or ablation of oesophageal and gastric superficial tumours. *Acta Gastroenterologica Belgica, 69*(3), 304-311.

Desai, K. M., Soper, N. J., Frisella, M. M., Quasebarth, M. A., Dunnegan, D. L., & Brunt, L. M. (2003). Efficacy of laparoscopic antireflux surgery in patients with barrett's esophagus. *American Journal of Surgery, 186*(6), 652-659.

Deviere, J. (2005). Barrett's oesophagus: The new endoscopic modalities have a future. *Gut, 54*(Suppl 1), 33-37.

Deviere, J., Ojeda Valdes, G., Cuevas Herrera, L., Closset, J., Le Moine, O., Eisendrath, P., . . . Scott, S. (2008). Safety, feasibility and weight loss after transoral gastroplasty: First human multicenter study. *Surgical Endoscopy, 22*(3), 589-598.

Di Biase, L., Saenz, L. C., Burkhardt, D. J., Vacca, M., Elayi, C. S., Barrett, C. D., . . . Natale, A. (2009). Esophageal capsule endoscopy after radiofrequency catheter ablation for atrial fibrillation: Documented higher risk of luminal esophageal damage with general anesthesia as compared with conscious sedation. *Circulation: Arrhythmia and Electrophysiology, 2*(2), 108-112.

Di Franco, F., Lamb, P. J., Karat, D., Hayes, N., & Griffin, S. M. (2008). Iatrogenic perforation of localized oesophageal cancer. *British Journal of Surgery, 95*(7), 837-839.

Di Lorenzo, C., & Orenstein, S. (2002). Fundoplication: Friend or foe? *Journal of Pediatric Gastroenterology & Nutrition, 34*(2), 117-124.

Di Mauro, D., Sarli, L., & Roncoroni, L. (2009). An exceptional postoperative gastric tube bleeding after esophageal resection for cancer. *Diseases of the Esophagus, 22*(5), E11-3.

Di Pace, M. R., Caruso, A. M., Catalano, P., Casuccio, A., Cimador, M., & De Grazia, E. (2011). Evaluation of esophageal motility and reflux in children treated for esophageal atresia with the use of combined multichannel intraluminal impedance and pH monitoring. *Journal of Pediatric Surgery, 46*(3), 443-451.

Dimofte, G., Moldovanu, R., Crumpei, F., Grigoras, O., & Tarcoveanu, E. (2010). Incomplete deployment of an expandable metallic stent in a patient with esophageal malignant stenosis. *Journal of Gastrointestinal & Liver Diseases, 19*(3), 325-328.

DiSario, J. (2005). Can the risk of pancreatitis following endoscopic papillary balloon dilation for common bile duct stones be reduced?. *Nature Clinical Practice Gastroenterology & Hepatology, 2*(4), 178-179.

Ditchburn, L. (2006). The principles of PEG feeding in the community. *Nursing Times, 102*(22), 43-45.

D'Journo, X. B., Ferraro, P., Martin, J., Chen, L. Q., & Duranceau, A. (2009). Lower oesophageal sphincter dysfunction is part of the functional abnormality in epiphrenic diverticulum. *British Journal of Surgery, 96*(8), 892-900.

D'Journo, X. B., Martin, J., Ferraro, P., & Duranceau, A. (2008). The esophageal remnant after gastric interposition. *Diseases of the Esophagus, 21*(5), 377-388.

Dobrucali, A., & Caglar, E. (2010). Palliation of malignant esophageal obstruction and fistulas with self expandable metallic stents. *World Journal of Gastroenterology, 16*(45), 5739-5745.

Dresner, S. M., Griffin, S. M., Wayman, J., Bennett, M. K., Hayes, N., & Raimes, S. A. (2003). Human model of duodenogastro-oesophageal reflux in the development of barrett's metaplasia. *British Journal of Surgery, 90*(9), 1120-1128.

El-Hassan, H., McKeown, K., & Muller, A. F. (2009). Clinical trial: Music reduces anxiety levels in patients attending for endoscopy. *Alimentary Pharmacology & Therapeutics, 30*(7), 718-724.

El-Matary, W. (2008). Percutaneous endoscopic gastrostomy in children. *Canadian Journal of Gastroenterology, 22*(12), 993-998.

Endo, S., Nakajima, K., Nishikawa, K., Takahashi, T., Souma, Y., Taniguchi, E., . . . Nishida, T. (2009). Laparoscopic heller-dor surgery for esophageal achalasia: Impact of intraoperative real-time manometric feedback on postoperative outcomes. *Digestive Surgery, 26*(4), 342-348.

Enomoto, S., Yahagi, N., Fujishiro, M., Oka, M., Kakushima, N., Iguchi, M., . . . Ichinose, M. (2007). Novel endoscopic hemostasis technique for use during endoscopic submucosal dissection. *Endoscopy, 39*(Suppl 1), E156.

Eshraghian, A., & Eshraghian, H. (2010). Interventional studies to confirm association of helicobacter pylori and insulin resistance: A winding road. *Southern Medical Journal, 103*(10), 1072.

Etoh, T., Katai, H., Fukagawa, T., Sano, T., Oda, I., Gotoda, T., . . . Sasako, M. (2005). Treatment of early gastric cancer in the elderly patient: Results of EMR and gastrectomy at a national referral center in japan. *Gastrointestinal Endoscopy, 62*(6), 868-871.

Ezoe, Y., Muto, M., Horimatsu, T., Morita, S., Miyamoto, S., Mochizuki, S., . . . Chiba, T. (2011). Efficacy of preventive endoscopic balloon dilation for esophageal stricture after endoscopic resection. *Journal of Clinical Gastroenterology, 45*(3), 222-227.

Farhat, S., Chaussade, S., Ponchon, T., Coumaros, D., Charachon, A., Barrioz, T., . . . SFED ESD study, g. (2011). Endoscopic submucosal dissection in a european setting. A multi-institutional report of a technique in development. *Endoscopy, 43*(8), 664-670.

Faulx, A. L., Catanzaro, A., Zyzanski, S., Cooper, G. S., Pfau, P. R., Isenberg, G., . . . Chak, A. (2002). Patient tolerance and acceptance of unsedated ultrathin esophagoscopy. *Gastrointestinal Endoscopy, 55*(6), 620-623.

Faure, C. (2011). Endoscopic features in esophageal atresia: From birth to adulthood. *Journal of Pediatric Gastroenterology & Nutrition, 52*(Suppl 1), S20-2.

Fernandez, A., Vila, J. J., Vazquez, S., Gonzalez-Portela, C., de la Iglesia, M., Lozano, M., & Toscano, E. (2010). Self-expanding plastic stents for the treatment of post-operative esophago-jejuno anastomosis leak. A case series study. *Revista Espanola De Enfermedades Digestivas, 102*(12), 704-710.

Fernandez-Esparrach, G., Gimeno-Garcia, A. Z., Ayuso, J. R., Gines, A., & Bordas, J. M. (2007). Vertebral prosthetic arthrodesis migration to the esophageal lumen: A rare cause of dysphagia. *Endoscopy, 39*(Suppl 1), E188.

Fernandez-Esparrach, G., Lautz, D. B., & Thompson, C. C. (2010). Peroral endoscopic anastomotic reduction improves intractable dumping syndrome in roux-en-Y gastric bypass patients. *Surgery for Obesity & Related Diseases, 6*(1), 36-40.

Finan, K. R., Renton, D., Vick, C. C., & Hawn, M. T. (2009). Prevention of post-operative leak following laparoscopic heller myotomy. *Journal of Gastrointestinal Surgery, 13*(2), 200-205.

Fisichella, P. M. (2011). Barrett esophagus after surgical treatment for achalasia. *Surgical Laparoscopy, Endoscopy & Percutaneous Techniques, 21*(4), 299-300.

Fisichella, P. M., Davis, C. S., Gagermeier, J., Dilling, D., Alex, C. G., Dorfmeister, J. A., . . . Gamelli, R. L. (2011). Laparoscopic antireflux surgery for gastroesophageal reflux disease after lung transplantation. *Journal of Surgical Research, 170*(2), e279-86.

Fleischer, D. E., & Sharma, V. K. (2008). Endoscopic ablation of barrett's esophagus using the halo system. *Digestive Diseases, 26*(4), 280-284.

Fountain, R. A., King, J., & Blackwelder, L. (2007). Successful pregnancy following partial pancreatectomy after complications from a laparoscopic adjustable gastric banding. *JOGNN - Journal of Obstetric, Gynecologic, & Neonatal Nursing, 36*(5), 457-463.

Freeman, L., Brown, W. A., Korin, A., Pilgrim, C. H., Smith, A., & Nottle, P. (2011). An approach to the assessment and management of the laparoscopic adjustable gastric band patient in the emergency department. *Emergency Medicine Australasia, 23*(2), 186-194. doi:http://dx.doi.org/10.1111/j.1742-6723.2011.01396.x

Fry, L. C., Monkemuller, K., & Malfertheiner, P. (2007). Systematic review: Endoluminal therapy for gastro-oesophageal reflux disease: Evidence from clinical trials. *European Journal of Gastroenterology & Hepatology, 19*(12), 1125-1139.

Fujishiro, M., Yahagi, N., Kakushima, N., Kodashima, S., Muraki, Y., Ono, S., . . . Omata, M. (2006). Endoscopic submucosal dissection of esophageal squamous cell neoplasms. *Clinical Gastroenterology & Hepatology, 4*(6), 688-694.

Fukuhara, K., Osugi, H., Takada, N., Takemura, M., Lee, S., Taguchi, S., . . . Kinoshita, H. (2004). Duodenogastric reflux eradicates helicobacter pylori after distal gastrectomy. *Hepato-Gastroenterology, 51*(59), 1548-1550.

Fyock, C. J., & Kethu, S. R. (2009). PEG placement causing liver perforation. *Journal of Clinical Gastroenterology, 43*(4), 385.

Gajbhiye, R., Quraishi, A. H., Mahajan, P., & Warhadpande, M. (2005). Dysphagia due to transmural migration of polypropylene mesh into esophagus. *Indian Journal of Gastroenterology, 24*(5), 226-227.

Garcia-Cano, J., Elmardi, L., & Urena, E. (2010). Reflux of duodenal contents and cholangitis after endoscopic biliary sphincterotomy. *Gastrointestinal Endoscopy, 72*(1), 225.

Gastrointestinal: Iatrogenic gastrointestinal bleeding. (2003). *Journal of Gastroenterology & Hepatology, 18*(2), 225.

Gastroscopy. (2003). *Nursing Times, 99*(18), 29.

George, T. P., & McNair, A. (2004). EMR: A word of caution. *Gastrointestinal Endoscopy, 59*(3), 460.

Gerke, H., Crowe, G. C., & Iannettoni, M. D. (2007). Endoscopic closure of cervical esophageal perforation caused by traumatic insertion of a mucosectomy cap. *Annals of Thoracic Surgery, 84*(1), 296-298.

Gerke, H., Siddiqui, J., Nasr, I., Van Handel, D. M., & Jensen, C. S. (2011). Efficacy and safety of EMR to completely remove barrett's esophagus: Experience in 41 patients. *Gastrointestinal Endoscopy, 74*(4), 761-771.

Gerke, H., Siddiqui, J., Parekh, K. R., Vanderheyden, A. D., & Mitros, F. A. (2009). Esophageal perforation complicating band ligator-assisted mucosal resection. *Gastrointestinal Endoscopy, 69*(1), 153-154.

Ghogomu, N. T., Kallogjeri, D., Nussenbaum, B., & Piccirillo, J. F. (2010). Iatrogenic esophageal perforation in patients with head and neck cancer: Evaluation of the SEER-medicare database. *Otolaryngology - Head & Neck Surgery, 142*(5), 728-734.

Giuliani, A., Galati, G., Demoro, M., Scimo, M., Pecorella, I., & Basso, L. (2010). Screening of helicobacter pylori infection after gastrectomy for cancer or peptic ulcer: Results of a cohort study. *Archives of Surgery, 145*(10), 962-967.

Goenka, A. H., Garg, P. K., Sharma, R., & Sharma, B. (2009). Spontaneous fracture of an uncovered enteral stent with proximal migration of fractured segment into cervical esophagus: First report. *Endoscopy, 41*(Suppl 2), E204-5.

Goertz, R. S., Raithel, M., Strobel, D., Wehler, M., Janka, R., Wein, A., . . . Boxberger, F. (2009). Splenic rupture as a complication of endoscopic esophageal bouginage. *Endoscopy, 41*(Suppl 2), E228-9.

Goessler, A., Huber-Zeyringer, A., & Hoellwarth, M. E. (2007). Recurrent gastroesophageal reflux in neurologically impaired patients after fundoplication. *Acta Paediatrica, 96*(1), 87-93.

Gonzalez, J. O., & Barkin, J. S. (2005). Endoscopic visualization of deployment of the bravo pH system to prevent malplacement. *Gastrointestinal Endoscopy, 62*(1), 178-180.

Goto, O., Fujishiro, M., Kodashima, S., Kakushima, N., Ono, S., Yahagi, N., & Omata, M. (2009). Feasibility of electrocautery snaring as the final step of endoscopic submucosal dissection for stomach epithelial neoplasms. *Digestive & Liver Disease, 41*(1), 26-30.

Goto, O., Fujishiro, M., Kodashima, S., Ono, S., Niimi, K., Hirano, K., . . . Koike, K. (2010). A second-look endoscopy after endoscopic submucosal dissection for gastric epithelial neoplasm may be unnecessary: A retrospective analysis of postendoscopic submucosal dissection bleeding. *Gastrointestinal Endoscopy, 71*(2), 241-248.

Gottig, S., Weiner, R. A., & Daskalakis, M. (2009). Preoperative weight reduction using the intragastric balloon. *Obesity Facts, 2*(Suppl 1), 20-23.

Gottrand, F., & Michaud, L. (2002). Percutaneous endoscopic gastrostomy and gastro-esophageal reflux: Are we correctly addressing the question?. *Journal of Pediatric Gastroenterology & Nutrition, 35*(1), 22-24.

Grainger, M., Dilley, C., Wood, N., & Castledine, G. (2011). Osteoporosis among young adults with complex physical disabilities. *British Journal of Nursing, 20*(3), 171-175.

Greywoode, G., Szuts, A., Wang, L. M., Sgromo, B., & Chetty, R. (2011). Iatrogenic deep epithelial misplacement ("gastritis cystica profunda") in a gastric foveolar-type adenoma after endoscopic manipulation: A diagnostic pitfall. *American Journal of Surgical Pathology, 35*(9), 1419-1421.

Groce, J. R., Raju, G. S., Hewlett, A., & Zwischenberger, J. B. (2007). Endoscopic clip closure of a gastric staple-line dehiscence (with video). *Gastrointestinal Endoscopy, 65*(2), 321-322.

Guardino, J. M., Vela, M. F., Connor, J. T., & Richter, J. E. (2004). Pneumatic dilation for the treatment of achalasia in untreated patients and patients with failed heller myotomy. *Journal of Clinical Gastroenterology, 38*(10), 855-860.

Gupta, S., Thompson, K., & Grellier, L. (2005). Purulent pericarditis: A complication of endoscopic oesophageal variceal sclerotherapy. *Endoscopy, 37*(7), 688.

Gurjar, M., Bhatnagar, S., Mishra, S., & Singhal, A. K. (2005). Clinically significant air entrapment in bowel after percutaneous endoscopic gastrostomy under general anesthesia. *Indian Journal of Gastroenterology, 24*(5), 227.

Hachiya, A., Chheda, N. N., & Postma, G. N. (2008). "Gastric pull-up" and dysphagia. *Ear, Nose, & Throat Journal, 87*(6), 325.

Hall, N. J., Ade-Ajayi, N., Al-Roubaie, J., Curry, J., Kiely, E. M., & Pierro, A. (2004). Retrospective comparison of open versus laparoscopic pyloromyotomy. *British Journal of Surgery, 91*(10), 1325-1329.

Hall, N. J., Van Der Zee, J., Tan, H. L., & Pierro, A. (2004). Meta-analysis of laparoscopic versus open pyloromyotomy. *Annals of Surgery, 240*(5), 774-778.

Hamaguchi, M., Katoh, T., Shimazaki, S., Tsuboi, H., Matsushita, T., Kojima, T., . . . Ida, K. (2004). Gallbladder perforation associated with gastric EMR for gastric adenoma. *Gastrointestinal Endoscopy, 60*(3), 488-490.

Hameed, H., & Khan, Y. I. (2009). Metastasis of carcinosarcoma of oesophagus to gastrostomy site. *British Journal of Oral & Maxillofacial Surgery, 47*(8), 643-644.

Hanaoka, N., Uedo, N., Ishihara, R., Higashino, K., Takeuchi, Y., Inoue, T., . . . Yano, M. (2010). Clinical features and outcomes of delayed perforation after endoscopic submucosal dissection for early gastric cancer. *Endoscopy, 42*(12), 1112-1115.

Haricharan, R. N., Aprahamian, C. J., Celik, A., Harmon, C. M., Georgeson, K. E., & Barnhart, D. C. (2008). Laparoscopic pyloromyotomy: Effect of resident training on complications. *Journal of Pediatric Surgery, 43*(1), 97-101.

Hasan, S., Jilaihawi, A. N., & Prakash, D. (2005). Conservative management of iatrogenic oesophageal perforations--a viable option. *European Journal of Cardio-Thoracic Surgery, 28*(1), 7-10.

Hata, M., Shiono, M., Sekino, H., Furukawa, H., Sezai, A., Iida, M., . . . Sezai, Y. (2005). Prospective randomized trial for optimal prophylactic treatment of the upper gastrointestinal complications after open heart surgery. *Circulation Journal, 69*(3), 331-334.

Hayakawa, M., Gando, S., Kameue, T., Morimoto, Y., & Kemmotsu, O. (2002). Abdominal compartment syndrome and intrahepatic portal venous gas: A possible complication of endoscopy. *Intensive Care Medicine, 28*(11), 1680-1681.

Helmstaedter, V., Engel, A., Huttenbrink, K. B., & Guntinas-Lichius, O. (2009). Carbon dioxide laser endoscopic diverticulotomy for zenker's diverticulum: Results and complications in a consecutive series of 40 patients. *Orl; Journal of Oto-Rhino-Laryngology & its Related Specialties, 71*(1), 40-44.

Herbella, F. A., Patti, M. G., & Del Grande, J. C. (2011). Hiatal mesh repair--current status. *Surgical Laparoscopy, Endoscopy & Percutaneous Techniques, 21*(2), 61-66.

Herbella, F. A., Tedesco, P., Nipomnick, I., Fisichella, P. M., & Patti, M. G. (2007). Effect of partial and total laparoscopic fundoplication on esophageal body motility. *Surgical Endoscopy, 21*(2), 285-288.

Hernandez, J. M., Barthel, J. S., & Kelley, S. T. (2008). Successful completion of neoadjuvant chemoradiation and surgical resection for esophageal cancer after perforation: A case for endoscopic stenting. *American Surgeon, 74*(12), 1215-1217.

Herrle, F., Peters, T., Lang, C., von Fluee, M., Kern, B., & Peterli, R. (2004). Bolus obstruction of pouch outlet by a granular bulk laxative after gastric banding. *Obesity Surgery, 14*(7), 1022-1024.

Higashiyama, M., Oka, S., Tanaka, S., Sanomura, Y., Imagawa, H., Shishido, T., . . . Chayama, K. (2011). Risk factors for bleeding after endoscopic submucosal dissection of gastric epithelial neoplasm. *Digestive Endoscopy, 23*(4), 290-295. doi:http://dx.doi.org/10.1111/j.1443-1661.2011.01151.x

Hiki, N., Fukunaga, T., Yamaguchi, T., Nunobe, S., Tokunaga, M., Ohyama, S., . . . Muto, T. (2007). Laparoscopic esophagogastric circular stapled anastomosis: A modified technique to protect the esophagus. *Gastric Cancer, 10*(3), 181-186.

Himpens, J., Dapri, G., & Cadiere, G. B. (2006). Laparoscopic conversion of the gastric bypass into a normal anatomy. *Obesity Surgery, 16*(7), 908-912.

Hindle, A. K., Gonzalez, F., & Brody, F. (2009). Anatomical measurements of the gastric cardia in obese patients. *Surgical Endoscopy, 23*(11), 2522-2524.

Hirano, I. (2010). Dilation in eosinophilic esophagitis: To do or not to do?. *Gastrointestinal Endoscopy, 71*(4), 713-714.

Hitomi, G., Watanabe, H., Tominaga, K., Yoshitake, N., Suzuki, M., Maeda, M., . . . Hiraishi, H. (2009). Endoscopic submucosal dissection in 100 lesions with early gastric carcinoma. *Hepato-Gastroenterology, 56*(89), 254-260.

Hofstetter, W. (2009). Invited commentary. *Annals of Thoracic Surgery, 88*(3), 973.

Holmes, S. (2004). Enteral feeding and percutaneous endoscopic gastrostomy. *Nursing Standard, 18*(20), 41-43.

Holscher, A. H. (2007). Endoscopic mucosal resection for early squamous-cell cancer of the esophagus--a dangerous game or standard treatment?. *Endoscopy, 39*(1), 77-79.

Hong, C. H., Kim, H. J., Park, J. H., Park, D. I., Cho, Y. K., Sohn, C. I., . . . Shin, J. H. (2009). Treatment of patients with gastric variceal hemorrhage: Endoscopic N-butyl-2-cyanoacrylate injection versus balloon-occluded retrograde transvenous obliteration. *Journal of Gastroenterology & Hepatology, 24*(3), 372-378.

Hopper, A. D., Bourke, M. J., Hourigan, L. F., Tran, K., Moss, A., & Swan, M. P. (2009). En-bloc resection of multiple type 1 gastric carcinoid tumors by endoscopic multi-band mucosectomy. *Journal of Gastroenterology & Hepatology, 24*(9), 1516-1521.

Hordijk, M. L., Siersema, P. D., Tilanus, H. W., & Kuipers, E. J. (2006). Electrocautery therapy for refractory anastomotic strictures of the esophagus. *Gastrointestinal Endoscopy, 63*(1), 157-163.

Hoteya, S., Iizuka, T., Kikuchi, D., & Yahagi, N. (2009). Benefits of endoscopic submucosal dissection according to size and location of gastric neoplasm, compared with conventional mucosal resection. *Journal of Gastroenterology & Hepatology, 24*(6), 1102-1106.

Hoteya, S., Iizuka, T., Kikuchi, D., & Yahagi, N. (2010). Clinical advantages of endoscopic submucosal dissection for gastric cancers in remnant stomach surpass conventional endoscopic mucosal resection. *Digestive Endoscopy, 22*(1), 17-20.

Hotta, K., Oyama, T., Akamatsu, T., Tomori, A., Hasebe, O., Nakamura, N., . . . Ohta, H. (2010). A comparison of outcomes of endoscopic submucosal dissection (ESD) for early gastric neoplasms between high-volume and low-volume centers: Multi-center retrospective questionnaire study conducted by the nagano ESD study group. *Internal Medicine, 49*(4), 253-259.

Hotter, A., Mangweth, B., Kemmler, G., Fiala, M., Kinzl, J., & Biebl, W. (2003). Therapeutic outcome of adjustable gastric banding in morbid obese patients. *Eating & Weight Disorders: EWD, 8*(3), 218-224.

Huang, Y., Kakushima, N., Takizawa, K., Tanaka, M., Ikehara, H., Yamaguchi, Y., . . . Nakajima, T. (2011). Risk factors for recurrence of artificial gastric ulcers after endoscopic submucosal dissection. *Endoscopy, 43*(3), 236-239.

Hunt, R., & Laidlaw, I. (2009). Re: A complication of intra-gastric balloon therapy. *Surgeon Journal of the Royal Colleges of Surgeons of Edinburgh & Ireland, 7*(5), 319.

Hur, H., Jeon, H. M., & Kim, W. (2008). Laparoscopic pancreas- and spleen-preserving D2 lymph node dissection in advanced (cT2) upper-third gastric cancer. *Journal of Surgical Oncology, 97*(2), 169-172.

Huscher, C. G., Mingoli, A., Sgarzini, G., Sansonetti, A., Lirici, M. M., Napolitano, C., & Piro, F. (2004). Videolaparoscopic total and subtotal gastrectomy with extended lymph node dissection for gastric cancer. *American Journal of Surgery, 188*(6), 728-735.

Hyun, Y. S., Han, D. S., Lee, H. L., Bae, J. H., & Eun, C. S. (2011). Gastric emphysema after endoscopic submucosal dissection. *Endoscopy, 43*(Suppl 2 UCTN), E83-4.

Iizuka, H., Kakizaki, S., Sohara, N., Onozato, Y., Ishihara, H., Okamura, S., . . . Mori, M. (2010). Stricture after endoscopic submucosal dissection for early gastric cancers and adenomas. *Digestive Endoscopy, 22*(4), 282-288. doi:http://dx.doi.org/10.1111/j.1443-1661.2010.01008.x

Imaeda, H., Hosoe, N., Suzuki, H., Saito, Y., Ida, Y., Nakamura, R., . . . Hibi, T. (2011). Effect of lansoprazole versus roxatidine on prevention of bleeding and promotion of ulcer healing after endoscopic submucosal dissection for superficial gastric neoplasia. *Journal of Gastroenterology, 46*(11), 1267-1272.

Imagawa, A., Okada, H., Kawahara, Y., Takenaka, R., Kato, J., Kawamoto, H., . . . Shiratori, Y. (2006). Endoscopic submucosal dissection for early gastric cancer: Results and degrees of technical difficulty as well as success. *Endoscopy, 38*(10), 987-990.

Inaba, K., Satoh, S., Ishida, Y., Taniguchi, K., Isogaki, J., Kanaya, S., & Uyama, I. (2010). Overlap method: Novel intracorporeal esophagojejunostomy after laparoscopic total gastrectomy. *Journal of the American College of Surgeons, 211*(6), e25-9.

Inoue, H., Mizuno, N., Sawaki, A., Takahashi, K., Aoki, M., Bhatia, V., . . . Yamao, K. (2006). Life-threatening delayed-onset bleeding after endoscopic ultrasound-guided 19-gauge trucut needle biopsy of a gastric stromal tumor. *Endoscopy, 38*(Suppl 2), E38.

Inoue, T., Nishino, T., Peng, Y. F., & Saga, T. (2008). Successful one-stage operation of aortoesophageal fistula from thoracic aneurysm using a rifampicin-soaked synthetic graft. *Interactive Cardiovascular & Thoracic Surgery, 7*(2), 322-324.

Islam, S., Cavanaugh, E., Honeke, R., & Hirschl, R. B. (2004). Diagnosis of a proximal tracheoesophageal fistula using three-dimensional CT scan: A case report. *Journal of Pediatric Surgery, 39*(1), 100-102.

Isomoto, H., Nishiyama, H., Yamaguchi, N., Fukuda, E., Ishii, H., Ikeda, K., . . . Shikuwa, S. (2009). Clinicopathological factors associated with clinical outcomes of endoscopic submucosal dissection for colorectal epithelial neoplasms. *Endoscopy, 41*(8), 679-683.

Isomoto, H., Ohnita, K., Yamaguchi, N., Fukuda, E., Ikeda, K., Nishiyama, H., . . . Shikuwa, S. (2010). Clinical outcomes of endoscopic submucosal dissection in elderly patients with early gastric cancer. *European Journal of Gastroenterology & Hepatology, 22*(3), 311-317.

Isomoto, H., Yamaguchi, N., Nakayama, T., Hayashi, T., Nishiyama, H., Ohnita, K., . . . Nakao, K. (2011). Management of esophageal stricture after complete circular endoscopic submucosal dissection for superficial esophageal squamous cell carcinoma. *BMC Gastroenterology, 11*, 46.

Iyilikci, L., Akarsu, M., Duran, E., Sarikaya, H. B., & Biyikli, B. (2009). Duodenal perforation and bilateral tension pneumothorax following endoscopic sphincterotomy. *Journal of Anesthesia, 23*(1), 164-165.

Jang, C. S., Park, D. K., Kwon, K. A., Yu, S. K., & Kim, Y. K. (2007). Pneumothorax as a complication of ESD. *Endoscopy, 39*(Suppl 1), E59.

Jang, J. S., Choi, S. R., Graham, D. Y., Kwon, H. C., Kim, M. C., Jeong, J. S., . . . Kim, S. K. (2009). Risk factors for immediate and delayed bleeding associated with endoscopic submucosal dissection of gastric neoplastic lesions. *Scandinavian Journal of Gastroenterology, 44*(11), 1370-1376.

Jeanniard-Malet, O., Caillol, F., Pesenti, C., Bories, E., Monges, G., & Giovannini, M. (2011). Short-term results of 42 endoscopic ampullectomies: A single-center experience. *Scandinavian Journal of Gastroenterology, 46*(7-8), 1014-1019.

Jeon, S. W., Jung, M. K., Cho, C. M., Tak, W. Y., Kweon, Y. O., Kim, S. K., & Choi, Y. H. (2009). Predictors of immediate bleeding during endoscopic submucosal dissection in gastric lesions. *Surgical Endoscopy, 23*(9), 1974-1979.

Jeon, S. W., Jung, M. K., Kim, S. K., Cho, K. B., Park, K. S., Park, C. K., . . . Yang, C. H. (2010). Clinical outcomes for perforations during endoscopic submucosal dissection in patients with gastric lesions. *Surgical Endoscopy, 24*(4), 911-916.

Jeong, H. K., Park, C. H., Jun, C. H., Lee, G. H., Kim, H. I., Kim, H. S., . . . Rew, J. S. (2007). A prospective randomized trial of either famotidine or pantoprazole for the prevention of bleeding after endoscopic submucosal dissection. *Journal of Korean Medical Science, 22*(6), 1055-1059.

Jeong, I. D., Jung, S. W., Bang, S. J., Shin, J. W., Park, N. H., & Kim do, H. (2011). Endoscopic enucleation for gastric subepithelial tumors originating in the muscularis propria layer. *Surgical Endoscopy, 25*(2), 468-474.

Jethwa, P., Lala, A., Powell, J., McConkey, C. C., Gillison, E. W., & Spychal, R. T. (2005). A regional audit of iatrogenic perforation of tumours of the oesophagus and cardia. *Alimentary Pharmacology & Therapeutics, 21*(4), 479-484.

Jiang, X., Hiki, N., Nunobe, S., Fukunaga, T., Kumagai, K., Nohara, K., . . . Yamaguchi, T. (2011). Long-term outcome and survival with laparoscopy-assisted pylorus-preserving gastrectomy for early gastric cancer. *Surgical Endoscopy, 25*(4), 1182-1186.

Jiang, X., Hiki, N., Nunobe, S., Fukunaga, T., Kumagai, K., Nohara, K., . . . Yamaguchi, T. (2011). Postoperative outcomes and complications after laparoscopy-assisted pylorus-preserving gastrectomy for early gastric cancer. *Annals of Surgery, 253*(5), 928-933.

Jiang, X., Hiki, N., Nunobe, S., Nohara, K., Kumagai, K., Sano, T., & Yamaguchi, T. (2011). Laparoscopy-assisted subtotal gastrectomy with very small remnant stomach: A novel surgical procedure for selected early gastric cancer in the upper stomach. *Gastric Cancer, 14*(2), 194-199.

Johkura, K., Yamada, H., & Kuroiwa, Y. (2003). Percutaneous endoscopic gastrostomy in amyotrophic lateral sclerosis: A word of caution. *Journal of Clinical Neuroscience, 10*(6), 737.

Johnston, S. D., Tham, T. C., & Mason, M. (2008). Death after PEG: Results of the national confidential enquiry into patient outcome and death. *Gastrointestinal Endoscopy, 68*(2), 223-227.

Jung, K. W., Gundersen, N., Kopacova, J., Arora, A. S., Romero, Y., Katzka, D., . . . Alexander, J. A. (2011). Occurrence of and risk factors for complications after endoscopic dilation in eosinophilic esophagitis. *Gastrointestinal Endoscopy, 73*(1), 15-21.

Jurowich, C., Thalheimer, A., Seyfried, F., Fein, M., Bender, G., Germer, C. T., & Wichelmann, C. (2011). Gastric leakage after sleeve gastrectomy-clinical presentation and therapeutic options. *Langenbecks Archives of Surgery, 396*(7), 981-987.

Kaiser, A. M., & Katkhouda, N. (2002). Laparoscopic management of the perforated viscus. *Seminars in Laparoscopic Surgery, 9*(1), 46-53.

Kala, Z., Dolina, J., Kysela, P., Hermanova, M., Prochazka, V., Kroupa, R., . . . Hep, A. (2006). Intraoperative manometry of the lower esophageal sphincter pressure during laparoscopic antireflux surgery with a mechanical calibration--early results. *Hepato-Gastroenterology, 53*(71), 710-714.

Kalyani, A., Teoh, C. M., & Sukumar, N. (2005). I jejunal patch repair of a duodenal perforation. *Medical Journal of Malaysia, 60*(2), 237-238.

Kamolz, T., Granderath, F. A., Bammer, T., Pasiut, M., & Pointner, R. (2002). Dysphagia and quality of life after laparoscopic nissen fundoplication in patients with and without prosthetic reinforcement of the hiatal crura. *Surgical Endoscopy, 16*(4), 572-577.

Kang, E. J., Jeong, S. W., Jang, J. Y., Cho, J. Y., Lee, S. H., Kim, H. G., . . . Kim, B. S. (2011). Long-term result of endoscopic histoacryl (N-butyl-2-cyanoacrylate) injection for treatment of gastric varices. *World Journal of Gastroenterology, 17*(11), 1494-1500.

Kang, S. H., Kim, J. I., Kim, E. M., Moon, H. S., Kim, S. H., Lee, B. S., . . . Jeong, H. Y. (2010). A rare case of disseminated intravascular coagulation after endoscopic submucosal dissection for early gastric cancer. *Endoscopy, 42*(Suppl 2), E33-4.

Kasama, K., Tagaya, N., Kanehira, E., Oshiro, T., Seki, Y., Kinouchi, M., . . . Kurokawa, Y. (2009). Laparoscopic sleeve gastrectomy with duodenojejunal bypass: Technique and preliminary results. *Obesity Surgery, 19*(10), 1341-1345.

Katada, C., Muto, M., Manabe, T., Boku, N., Ohtsu, A., & Yoshida, S. (2003). Esophageal stenosis after endoscopic mucosal resection of superficial esophageal lesions. *Gastrointestinal Endoscopy, 57*(2), 165-169.

Kato, M., Nishida, T., Tsutsui, S., Komori, M., Michida, T., Yamamoto, K., . . . Hayashi, N. (2011). Endoscopic submucosal dissection as a treatment for gastric noninvasive neoplasia: A multicenter study by osaka university ESD study group. *Journal of Gastroenterology, 46*(3), 325-331.

Kawahara, H., Okuyama, H., Mitani, Y., Nomura, M., Nose, K., Yoneda, A., . . . Fukuzawa, M. (2009). Influence of thoracoscopic esophageal atresia repair on esophageal motor function and gastroesophageal reflux. *Journal of Pediatric Surgery, 44*(12), 2282-2286.

Kellermayer, R., Kim, S. T., Perez, M., Tatevian, N., Dishop, M., Abrams, S., . . . Gilger, M. A. (2007). Cytomegalovirus esophagitis preceding the diagnosis of systemic lupus erythematosus. *Endoscopy, 39*(Suppl 1), E218.

Kesler, K. A., Tarvin, S. E., Brooks, J. A., Rieger, K. M., Lehman, G. A., & Brown, J. W. (2004). Thoracoscopy-assisted heller myotomy for the treatment of achalasia: Results of a minimally invasive technique. *Annals of Thoracic Surgery, 77*(2), 385-391.

Khalil, Q., Kibria, R., & Akram, S. (2010). Acute buried bumper syndrome. *Southern Medical Journal, 103*(12), 1256-1258.

Khan, R., Abid, S., Hamid, S., Abbas, Z., Shah, H., & Jafri, W. (2005). Outcome of endoscopic therapeutic interventions: Are they different among various non-malignant esophageal diseases. *Journal of Ayub Medical College, Abbottabad: JAMC, 17*(4), 22-25.

Khan, Z. A., Drye, E., Pardeep, S., & Novell, J. R. (2002). Small bowel volvulus resulting in infarction due to an anterior gastropexy band. *Journal of the Society of Laparoendoscopic Surgeons, 6*(1), 77-79.

Kia, L., Sikka, S. K., & Komanduri, S. (2010). An unusual case of malignant dysphagia after colonic interposition treated with endoscopic mucosal resection. *Gastrointestinal Endoscopy, 72*(6), 1320-1321.

Kikuchi, D., Iizuka, T., Hoteya, S., Yamashita, S., Nakamura, M., Kuroki, Y., . . . Yahagi, N. (2011). Usefulness of endoscopic ultrasound for the prediction of intraoperative bleeding of endoscopic submucosal dissection for gastric neoplasms. *Journal of Gastroenterology & Hepatology, 26*(1), 68-72. doi:http://dx.doi.org/10.1111/j.1440-1746.2010.06412.x

Kim, C. G., Choi, I. J., Lee, J. Y., Cho, S. J., Lee, J. H., Ryu, K. W., . . . Kim, Y. W. (2009). Effective diameter of balloon dilation for benign esophagojejunal anastomotic stricture after total gastrectomy. *Surgical Endoscopy, 23*(8), 1775-1780.

Kim, E. S., Jeon, S. W., Park, S. Y., Cho, C. M., Tak, W. Y., Kweon, Y. O., . . . Choi, Y. H. (2009). Comparison of double-layered and covered niti-S stents for palliation of malignant dysphagia. *Journal of Gastroenterology & Hepatology, 24*(1), 114-119.

Kim, J. W., Kim, H. S., Park, D. H., Park, Y. S., Jee, M. G., Baik, S. K., . . . Lee, D. K. (2007). Risk factors for delayed postendoscopic mucosal resection hemorrhage in patients with gastric tumor. *European Journal of Gastroenterology & Hepatology, 19*(5), 409-415.

Kim, M. C., Choi, H. J., Jung, G. J., & Kim, H. H. (2007). Techniques and complications of laparoscopy-assisted distal gastrectomy (LADG) for gastric cancer. *European Journal of Surgical Oncology, 33*(6), 700-705.

Kim, M. G., Kawada, H., Kim, B. S., Kim, T. H., Kim, K. C., Yook, J. H., & Kim, B. S. (2011). A totally laparoscopic distal gastrectomy with gastroduodenostomy (TLDG) for improvement of the early surgical outcomes in high BMI patients. *Surgical Endoscopy, 25*(4), 1076-1082.

Kim, S. S., Lau, S. T., Lee, S. L., & Waldhausen, J. H. (2005). The learning curve associated with laparoscopic pyloromyotomy. *Journal of Laparoendoscopic & Advanced Surgical Techniques.Part A, 15*(5), 474-477.

Kinney, T., & Waxman, I. (2003). Treatment of benign esophageal tumors by endoscopic techniques. *Seminars in Thoracic & Cardiovascular Surgery, 15*(1), 27-34.

Kinoshita, Y., Udagawa, H., Tsutsumi, K., Ueno, M., Mine, S., & Ehara, K. (2009). Surgical repair of refractory strictures of esophagogastric anastomoses caused by leakage following esophagectomy. *Diseases of the Esophagus, 22*(5), 427-433.

Kiriyama, S., Oda, I., Nishimoto, F., Mashimo, Y., Ikehara, H., & Gotoda, T. (2009). Pilot study to assess the safety of local lidocaine injections during endoscopic submucosal dissection for early gastric cancer. *Gastric Cancer, 12*(3), 142-147.

Kiyama, T., Mizutani, T., Okuda, T., Fujita, I., Tokunaga, A., Tajiri, T., & Barbul, A. (2005). Postoperative changes in body composition after gastrectomy. *Journal of Gastrointestinal Surgery, 9*(3), 313-319.

Knox, M. A. (2011). Should we screen patients for barrett's esophagus? no: The case against screening. *American Family Physician, 83*(10), 1148.

Kobayashi, N., Ishikawa, T., Fu, K. I., Yamamoto, T., Hirahara, Y., & Sekiguchi, R. (2007). Abnormal serum liver chemistry related to pneumoperitoneum after endoscopic submucosal dissection. *Endoscopy, 39*(Suppl 1), E327.

Kockerling, F., & Schug-Pass, C. (2009). Gastroscopically controlled laparoscopic sleeve gastrectomy. *Obesity Facts, 2*(Suppl 1), 15-18.

Kodashima, S., Fujishiro, M., Yahagi, N., Kakushima, N., Ichinose, M., & Omata, M. (2006). Endoscopic submucosal dissection for gastric neoplasia: Experience with the flex-knife. *Acta Gastroenterologica Belgica, 69*(2), 224-229.

Komenaka, I. K., Goyal, A., Nguyen, E. T., & Gardezi, S. Q. (2003). A "clean" technique for managing bleeding duodenal ulcer with a new aortic prosthesis: Endoscopic-assisted repair of bleeding duodenal ulcer. *Surgical Laparoscopy, Endoscopy & Percutaneous Techniques, 13*(5), 357-359.

Kostic, S., Lonroth, H., & Lundell, L. (2004). Leakage testing at the time of surgical oesophageal myotomy. *Digestive Surgery, 21*(3), 223-226.

Kothari, S. N. (2011). Bariatric surgery and postoperative imaging. *Surgical Clinics of North America, 91*(1), 155-172.

Kotzampassakis, N., Christodoulou, M., Krueger, T., Demartines, N., Vuillemier, H., Cheng, C., . . . Ris, H. B. (2009). Esophageal leaks repaired by a muscle onlay approach in the presence of mediastinal sepsis. *Annals of Thoracic Surgery, 88*(3), 966-972.

Kubba, H., Spinou, E., & Brown, D. (2003). Is same-day discharge suitable following rigid esophagoscopy? findings in a series of 655 cases. *Ear, Nose, & Throat Journal, 82*(1), 33-36.

Kubo, M., Sasako, M., Gotoda, T., Ono, H., Fujishiro, M., Saito, D., . . . Katai, H. (2002). Endoscopic evaluation of the remnant stomach after gastrectomy: Proposal for a new classification. *Gastric Cancer, 5*(2), 83-89.

Kumarasena, R. S., Niriella, M. A., Kalubowila, U., de Silva, A. P., Dassanayake, A. S., & de Silva, H. J. (2010). Bleeding from oesophageal ulceration induced by endoscopic variceal ligation for primary prophylaxis. *Gut, 59*(11), 1586.

Kunisaki, C., Makino, H., Oshima, T., Fujii, S., Kimura, J., Takagawa, R., . . . Endo, I. (2011). Application of the transorally inserted anvil (OrVil) after laparoscopy-assisted total gastrectomy. *Surgical Endoscopy, 25*(4), 1300-1305.

Kurdow, R., Schniewind, B., Delere, Y., Boehle, A. S., Luttges, J., & Doniec, J. M. (2003). Implantation metastasis of a hypopharyngeal carcinoma at the site of a percutaneous endoscopic gastrostomy. *Endoscopy, 35*(5), 462.

Kusunoki, M., Miyake, K., Shindo, T., Ueki, N., Kawagoe, T., Gudis, K., . . . Sakamoto, C. (2011). The incidence of deep vein thrombosis in japanese patients undergoing endoscopic submucosal dissection. *Gastrointestinal Endoscopy, 74*(4), 798-804.

Kuwano, H., Mochiki, E., Asao, T., Kato, H., Shimura, T., & Tsutsumi, S. (2004). Double endoscopic intraluminal operation for upper digestive tract diseases: Proposal of a novel procedure. *Annals of Surgery, 239*(1), 22-27.

Kwak, H., Darmas, B., & Nutt, M. (2009). Duodenal polypectomy is a rare cause of acute pancreatitis. *Annals of the Royal College of Surgeons of England, 91*(5), W7-9.

Lacerda, C. M., Freire, W., Vieira de Melo, P. S., Lacerda, H. R., & Carvalho, G. (2002). Splenectomy and ligation of the left gastric vein in schistosomiasis mansoni: The effect on esophageal variceal pressure measured by a non-invasive technique. *Keio Journal of Medicine, 51*(2), 89-92.

Lamb, P. J., Griffin, S. M., Chandrashekar, M. V., Richardson, D. L., Karat, D., & Hayes, N. (2004). Prospective study of routine contrast radiology after total gastrectomy. *British Journal of Surgery, 91*(8), 1015-1019.

Lang, R. A., Spelsberg, F. W., Winter, H., Jauch, K. W., & Huttl, T. P. (2007). Transoral diverticulostomy with a modified endo-gia stapler: Results after 4 years of experience. *Surgical Endoscopy, 21*(4), 532-536.

Lange, R., Rey, M., & Fernandez, E. D. (2008). Open vs. laparoscopic pyloromyotomy--a retrospective analysis. *Minimally Invasive Therapy & Allied Technologies: Mitat, 17*(5), 313-317.

Langer, F. B., Schoppmann, S. F., Prager, G., Riegler, F. M., & Zacherl, J. (2010). Solving the problem of difficult stent removal due to tissue ingrowth in partially uncovered esophageal self-expanding metal stents. *Annals of Thoracic Surgery, 89*(5), 1691-1692.

Lao, J., Bostwick, H. E., Berezin, S., Halata, M. S., Newman, L. J., & Medow, M. S. (2003). Esophageal food impaction in children. *Pediatric Emergency Care, 19*(6), 402-407.

Lauwers, G. Y., Ban, S., Mino, M., Ota, S., Matsumoto, T., Arai, S., . . . Shimizu, M. (2004). Endoscopic mucosal resection for gastric epithelial neoplasms: A study of 39 cases with emphasis on the evaluation of specimens and recommendations for optimal pathologic analysis. *Modern Pathology, 17*(1), 2-8.

Lee, A., Carter, H., & Crabbe, D. (2003). Percutaneous endoscopic gastrostomy. procedure in practice. *British Journal of Perioperative Nursing, 13*(7), 298-302.

Lee, B. I., Choi, K. Y., Kang, H. J., Kim, B. W., Choi, H., Kim, C. W., . . . Park, S. M. (2006). Sealing an extensive anastomotic leak after esophagojejunostomy with an antimigration-modified covered self-expanding metal stent. *Gastrointestinal Endoscopy, 64*(6), 1024-1026.

Lee, B. S., Kim, S. M., Seong, J. K., Kim, S. H., Jeong, H. Y., Lee, H. Y., . . . Cho, J. S. (2005). Phlegmonous gastritis after endoscopic mucosal resection. *Endoscopy, 37*(5), 490-493.

Lee, C. T., Huang, S. P., Cheng, T. Y., Chiang, T. H., Tai, C. M., Su, W. C., . . . Wang, H. P. (2007). Factors associated with myocardial infarction after emergency endoscopy for upper gastrointestinal bleeding in high-risk patients: A prospective observational study. *American Journal of Emergency Medicine, 25*(1), 49-52.

Lee, H. J., Kim, H. H., Kim, M. C., Ryu, S. Y., Kim, W., Song, K. Y., . . . Korean Laparoscopic Gastrointestinal Surgery Study,Group. (2009). The impact of a high body mass index on laparoscopy assisted gastrectomy for gastric cancer. *Surgical Endoscopy, 23*(11), 2473-2479.

Lee, H. L., Kwon, O. W., Lee, K. N., Jun, D. W., Eun, C. S., Lee, O. Y., . . . Paik, S. S. (2011). Endoscopic histologic diagnosis of gastric GI submucosal tumors via the endoscopic submucosal dissection technique. *Gastrointestinal Endoscopy, 74*(3), 693-695.

Lee, J. H., & Kim, J. J. (2007). Endoscopic mucosal resection of early gastric cancer: Experiences in korea. *World Journal of Gastroenterology, 13*(27), 3657-3661.

Lee, J. H., Yom, C. K., & Han, H. S. (2009). Comparison of long-term outcomes of laparoscopy-assisted and open distal gastrectomy for early gastric cancer. *Surgical Endoscopy, 23*(8), 1759-1763.

Lee, S. H., Park, J. H., Park do, H., Chung, I. K., Kim, H. S., Park, S. H., . . . Cho, H. D. (2006). Clinical efficacy of EMR with submucosal injection of a fibrinogen mixture: A prospective randomized trial. *Gastrointestinal Endoscopy, 64*(5), 691-696.

Lee, S. J., Hyung, W. J., Koo, B. N., Lee, J. Y., Jun, N. H., Kim, S. C., . . . Kim, K. J. (2008). Laparoscopy-assisted subtotal gastrectomy under thoracic epidural-general anesthesia leading to the effects on postoperative micturition. *Surgical Endoscopy, 22*(3), 724-730.

Lee, T. H., Lee, S. H., Park, J. Y., Lee, C. K., Chung, I. K., Kim, H. S., . . . Lee, M. S. (2009). Primary incisional therapy with a modified method for patients with benign anastomotic esophageal stricture. *Gastrointestinal Endoscopy, 69*(6), 1029-1033.

Lee, T. H., & Shiun, Y. C. (2011). Changes in gastroesophageal reflux in patients with nasogastric tube followed by percutaneous endoscopic gastrostomy. *Journal of the Formosan Medical Association, 110*(2), 115-119.

Leers, J. M., Vivaldi, C., Schafer, H., Bludau, M., Brabender, J., Lurje, G., . . . Metzger, R. (2009). Endoscopic therapy for esophageal perforation or anastomotic leak with a self-expandable metallic stent. *Surgical Endoscopy, 23*(10), 2258-2262.

Lemoine, C., Paris, C., Morris, M., Vali, K., Beaunoyer, M., & Aspirot, A. (2011). Open transumbilical pyloromyotomy: Is it more painful than the laparoscopic approach?. *Journal of Pediatric Surgery, 46*(5), 870-873.

Lenglinger, J., Eisler, M., & Riegler, M. (2006). Geometry and biomechanics of the esophagogastric junction: Implications for antireflux surgery. *Annals of Surgery, 243*(2), 288-9.

Lenz, J. I., Hubens, G. J., Pelckmans, P. A., & Moreels, T. G. (2011). Serious complication following use of StomaphyX. *Endoscopy, 43*(Suppl 2 UCTN), E173-4.

Levine, M. L. (2005). Pneumatic dilation for the treatment of achalasia in untreated patients and patients with failed heller myotomy. *Journal of Clinical Gastroenterology, 39*(6), 549.

Lewis, J. J., Rubenstein, J. H., Singal, A. G., Elmunzer, B. J., Kwon, R. S., & Piraka, C. R. (2011). Factors associated with esophageal stricture formation after endoscopic mucosal resection for neoplastic barrett's esophagus. *Gastrointestinal Endoscopy, 74*(4), 753-760.

Liakakos, T., Patapis, P., Charalambopoulos, A., & Macheras, A. (2009). Laparoscopic D2 gastrectomy: Time for a randomized trial. *World Journal of Surgery, 33*(7), 1542-1543.

Lieto, E., Orditura, M., Castellano, P., Pinto, M., Zamboli, A., De Vita, F., . . . Galizia, G. (2011). Endoscopic intraoperative anastomotic testing may avoid early gastrointestinal anastomotic complications. A prospective study. *Journal of Gastrointestinal Surgery, 15*(1), 145-152.

Lim, J. U., Joo, K. R., Park, J. J., Shin, H. P., Cha, J. M., & Lee, J. I. (2010). Duodenal obstruction following papillary stenosis: A rare complication after endoscopic sphincterotomy. *Endoscopy, 42*(Suppl 2), E342-3.

Lipp, A., & Lusardi, G. (2009). A systematic review of prophylactic antimicrobials in PEG placement. *Journal of Clinical Nursing, 18*(7), 938-948.

Litle, V. R., Buenaventura, P. O., & Luketich, J. D. (2002). Minimally invasive resection for esophageal cancer. *Surgical Clinics of North America, 82*(4), 711-728.

Liu, F., Chen, K., He, Z., Ning, T., Pan, Y., Cai, H., & Ke, Y. (2009). Hepatitis C seroprevalence and associated risk factors, anyang, china. *Emerging Infectious Diseases, 15*(11), 1819-1822.

Ljungdahl, M., & Sundbom, M. (2006). Complication rate lower after percutaneous endoscopic gastrostomy than after surgical gastrostomy: A prospective, randomized trial. *Surgical Endoscopy, 20*(8), 1248-1251.

Lo, G. H., Chen, W. C., Chen, M. H., Lin, C. P., Lo, C. C., Hsu, P. I., . . . Lai, K. H. (2004). Endoscopic ligation vs. nadolol in the prevention of first variceal bleeding in patients with cirrhosis. *Gastrointestinal Endoscopy, 59*(3), 333-338.

Lo, H. C., Wu, S. C., Huang, H. C., Yeh, C. C., Huang, J. C., & Hsieh, C. H. (2011). Laparoscopic simple closure alone is adequate for low risk patients with perforated peptic ulcer. *World Journal of Surgery, 35*(8), 1873-1878.

Locher, J. L., Bonner, J. A., Carroll, W. R., Caudell, J. J., Keith, J. N., Kilgore, M. L., . . . Allison, J. J. (2011). Prophylactic percutaneous endoscopic gastrostomy tube placement in treatment of head and neck cancer: A comprehensive review and call for evidence-based medicine. *Jpen: Journal of Parenteral & Enteral Nutrition, 35*(3), 365-374.

Lohiya, G. S., Tan-Figueroa, L., & Krishna, V. (2010). Intermittent diarrhea as a delayed presentation of percutaneous endoscopic gastrostomy (PEG)-associated fistula. *Journal of the American Board of Family Medicine: JABFM, 23*(5), 681-684.

Lopes, C. V., Hela, M., Pesenti, C., Bories, E., Caillol, F., Monges, G., & Giovannini, M. (2007). Circumferential endoscopic resection of barrett's esophagus with high-grade dysplasia or early adenocarcinoma. *Surgical Endoscopy, 21*(5), 820-824.

Loske, G., Schorsch, T., & Muller, C. (2010). Endoscopic vacuum sponge therapy for esophageal defects. *Surgical Endoscopy, 24*(10), 2531-2535.

Lotan, G., Broide, E., Efrati, Y., & Klin, B. (2004). Laparoscopically monitored percutaneous endoscopic gastrostomy (PEG) in children: A safer procedure. *Surgical Endoscopy, 18*(8), 1280-1282.

Louis, H., & Deviere, J. (2003). Endoscopic implantation of enteryx for the treatment of gastroesophageal reflux disease: Technique, pre-clinical and clinical experience. *Gastrointestinal Endoscopy Clinics of North America, 13*(1), 191-200.

Low, D. E., & Kozarek, R. A. (2003). Removal of esophageal expandable metal stents: Description of technique and review of potential applications. *Surgical Endoscopy, 17*(6), 990-996.

Lu, B., Cai, X., Lu, W., Huang, Y., & Jin, X. (2006). Laparoscopic pancreaticoduodenectomy to treat cancer of the ampulla of vater. *Journal of the Society of Laparoendoscopic Surgeons, 10*(1), 97-100.

Lucendo, A. J., & De Rezende, L. (2007). Endoscopic dilation in eosinophilic esophagitis: A treatment strategy associated with a high risk of perforation. *Endoscopy, 39*(4), 376.

Luckey, A. E.,3rd, & DeMeester, S. R. (2006). Complications of achalasia surgery. *Thoracic Surgery Clinics, 16*(1), 95-98.

Ludwig, K., Bernhardt, J., Amtsberg, G., Patrzyk, M., Wilhelm, L., & Hoene, A. (2003). Pathophysiological measurement and results after laparoscopic fundoplication for gastroesophageal reflux disease. *Surgery Today, 33*(2), 89-94.

Lujber, L., & Pytel, J. (2003). Second look endoscopy by a laryngo-fiberscope passed via the feeding tube of the percutaneous endoscopic gastrostomy. *Surgical Laparoscopy, Endoscopy & Percutaneous Techniques, 13*(3), 212-214.

Lum, C., & Davidson, M. D. (2010). Parosmia after laparoscopic gastric bypass and gastric banding. *Journal of the American Osteopathic Association, 110*(10), 617-618.

Lundell, L. (2002). Laparoscopic fundoplication is the treatment of choice for gastro-oesophageal reflux disease. protagonist. *Gut, 51*(4), 468-471.

Machuca, E., Ortiz, A. M., & Rabagliati, R. (2005). Streptococcus viridans-associated peritonitis after gastroscopy. *Advances in Peritoneal Dialysis, 21*, 60-62.

MacLean, A. A., Alvarez, N. R., Davies, J. D., Lopez, P. P., & Pizano, L. R. (2007). Complications of percutaneous endoscopic and fluoroscopic gastrostomy tube insertion procedures in 378 patients. *Gastroenterology Nursing, 30*(5), 337-341.

Madan, A. K., Lanier, B., & Tichansky, D. S. (2006). Laparoscopic repair of gastrointestinal leaks after laparoscopic gastric bypass. *American Surgeon, 72*(7), 586-590.

Madhoun, M. F., Blankenship, M. M., Blankenship, D. M., Krempl, G. A., & Tierney, W. M. (2011). Prophylactic PEG placement in head and neck cancer: How many feeding tubes are unused (and unnecessary)?. *World Journal of Gastroenterology, 17*(8), 1004-1008.

Maeda, Y., Hirasawa, D., Fujita, N., Suzuki, T., Obana, T., Sugawara, T., . . . Noda, Y. (2011). Mediastinal emphysema after esophageal endoscopic submucosal dissection: Its prevalence and clinical significance. *Digestive Endoscopy, 23*(3), 221-226. doi:http://dx.doi.org/10.1111/j.1443-1661.2010.01085.x

Mahadeva, S., Sam, I. C., Khoo, B. L., Khoo, P. S., & Goh, K. L. (2009). Antibiotic prophylaxis tailored to local organisms reduces percutaneous gastrostomy site infection. *International Journal of Clinical Practice, 63*(5), 760-765.

Mahadi, S. I., Derweesh, A. M., & Ahmed, M. E. (2008). Esophagobronchial fistula following injection sclerotherapy for esophageal varices. *Endoscopy, 40*(Suppl 2), E59.

Mahomed, A., & Islam, S. (2011). Laparoscopic-assisted transhiatal gastric transposition for long gap esophageal atresia in an infant. *Journal of Pediatric Surgery, 46*(3), 611-613.

Maier, J., Rudez, J., & Huber, A. (2008). Two possibly iatrogenic biliary-duodenal fistulas in a single patient after medical and surgical interventions. *Canadian Journal of Surgery, 51*(2), E28-9.

Majumdar, D., Rao, J. G., Kapur, K., Saeed, B. T., & Soliman, A. (2010). Recurrent methicillin-resistant staphylococcus aureus septicaemia and pacemaker-lead-associated endocarditis following diagnostic gastroscopy. *Gut, 59*(2), 277-278.

Manes, G., Corsi, F., Pallotta, S., Massari, A., Foschi, D., & Trabucchi, E. (2008). Fixation of a covered self-expandable metal stent by means of a polypectomy snare: An easy method to prevent stent migration. *Digestive & Liver Disease, 40*(9), 791-793.

Mangi, Q., Ridgway, P. F., Ibrahim, Z., & Evoy, D. (2004). Dislocation of the mandible. *Surgical Endoscopy, 18*(3), 554-556.

Mannen, K., Tsunada, S., Hara, M., Yamaguchi, K., Sakata, Y., Fujise, T., . . . Fujimoto, K. (2010). Risk factors for complications of endoscopic submucosal dissection in gastric tumors: Analysis of 478 lesions. *Journal of Gastroenterology, 45*(1), 30-36.

Manouras, A., Lagoudianakis, E. E., Antonakis, P. T., & Romanos, A. (2005). Endoscope entrapment in the choledochal duct during endoscopic retrograde cholangiography for choledocholithiasis. *Endoscopy, 37*(8), 785.

Mansour, K. A., & Sharma, J. (2003). Delayed intrathoracic rupture of herniated nissen fundoplication: Report of two cases. *Annals of Thoracic Surgery, 75*(6), 1957-1959.

Mantsopoulos, K., Zenk, J., Konturek, P. C., & Iro, H. (2010). Local infection after percutaneous endoscopic gastrostomy in ENT tumor patients: Evaluation of the influence of the abdominal thickness and other parameters. *Medical Science Monitor, 16*(3), R116-123.

Markar, S. R., Karthikesalingam, A. P., Wagner, O. J., Jackson, D., Hewes, J. C., Vyas, S., & Hashemi, M. (2011). Systematic review and meta-analysis of laparoscopic nissen fundoplication with or without division of the short gastric vessels. *British Journal of Surgery, 98*(8), 1056-1062. doi:http://dx.doi.org/10.1002/bjs.7519

Maroju, N. K., Srinivasan, K., Kadambari, D., & Vaithiswaran, V. (2004). Postoperative intussusception in the adult: A case report. *Tropical Gastroenterology, 25*(1), 40-41.

Martinek, M., Meyer, C., Hassanein, S., Aichinger, J., Bencsik, G., Schoefl, R., . . . Purerfellner, H. (2010). Identification of a high-risk population for esophageal injury during radiofrequency catheter ablation of atrial fibrillation: Procedural and anatomical considerations. *Heart Rhythm, 7*(9), 1224-1230.

Mathew, J., Saklani, A. P., Al-Dabbagh, A. K., & Haboubi, N. Y. (2003). Snaring of submucosal tumors of gastric fundus. *Surgical Endoscopy, 17*(11), 1850-1851.

Mathus-Vliegen, E. M., & Tytgat, G. N. (2005). Intragastric balloon for treatment-resistant obesity: Safety, tolerance, and efficacy of 1-year balloon treatment followed by a 1-year balloon-free follow-up. *Gastrointestinal Endoscopy, 61*(1), 19-27.

Matsukura, N., Tajiri, T., Kato, S., Togashi, A., Masuda, G., Tokunaga, A., & Yamada, N. (2004). Diagnostic value of culture, histology and PCR for helicobacter pylori in the remnant stomach after surgery. *Alimentary Pharmacology & Therapeutics, 20*(Suppl 1), 33-38.

Matsunaga, Y., Goto, A., Kaneko, H., Hasegawa, N., Wakasugi, H., Itoh, M., . . . Shinomura, Y. (2011). Gastric rupture before puncture of the stomach in percutaneous gastrostomy. *Endoscopy, 43*(Suppl 2 UCTN), E57.

Mattioli, S., Lugaresi, M. L., Di Simone, M. P., D'Ovidio, F., Pilotti, V., Bassi, F., . . . Gavelli, G. (2004). The surgical treatment of the intrathoracic migration of the gastro-oesophageal junction and of short oesophagus in gastro-oesophageal reflux disease. *European Journal of Cardio-Thoracic Surgery, 25*(6), 1079-1088.

Maulaz, E. B., de Mattos, A. A., Pereira-Lima, J., & Dietz, J. (2003). Bacteremia in cirrhotic patients submitted to endoscopic band ligation of esophageal varices. *Arquivos De Gastroenterologia, 40*(3), 166-172.

Melvin, W. S., Needleman, B. J., Krause, K. R., Schneider, C., Wolf, R. K., Michler, R. E., & Ellison, E. C. (2002). Computer-enhanced robotic telesurgery. initial experience in foregut surgery. *Surgical Endoscopy, 16*(12), 1790-1792.

Menon, P., & Rao, K. L. (2008). Esophageal surgery in newborns, infants and children. *Indian Journal of Pediatrics, 75*(9), 939-943.

Merchea, A., Cullinane, D. C., Sawyer, M. D., Iqbal, C. W., Baron, T. H., Wigle, D., . . . Zielinski, M. D. (2010). Esophagogastroduodenoscopy-associated gastrointestinal perforations: A single-center experience. *Surgery, 148*(4), 876-880.

Min, B. H., Lee, H., Jeong, J. S., Son, H. J., Kim, J. J., Rhee, J. C., . . . Yoon, Y. B. (2008). Comparison of a novel teeth-protecting mouthpiece with a traditional device in preventing endoscopy-related complications involving teeth or temporomandibular joint: A multicenter randomized trial. *Endoscopy, 40*(6), 472-477.

Min, B. H., Lee, J. H., Kim, J. J., Shim, S. G., Chang, D. K., Kim, Y. H., . . . Rhee, J. C. (2009). Clinical outcomes of endoscopic submucosal dissection (ESD) for treating early gastric cancer: Comparison with endoscopic mucosal resection after circumferential precutting (EMR-P). *Digestive & Liver Disease, 41*(3), 201-209.

Minami, S., Gotoda, T., Ono, H., Oda, I., & Hamanaka, H. (2006). Complete endoscopic closure of gastric perforation induced by endoscopic resection of early gastric cancer using endoclips can prevent surgery (with video). *Gastrointestinal Endoscopy, 63*(4), 596-601.

Minar, P., Garland, J., Martinez, A., & Werlin, S. (2011). Safety of percutaneous endoscopic gastrostomy in medically complicated infants. *Journal of Pediatric Gastroenterology & Nutrition, 53*(3), 293-295.

Misra, T., Lalor, E., & Fedorak, R. N. (2004). Endoscopic perforation rates at a canadian university teaching hospital. *Canadian Journal of Gastroenterology, 18*(4), 221-226.

Miyashita, M., Nomura, T., Makino, H., Hagiwara, N., Takahashi, K., Sakata, Y., . . . Tajiri, T. (2006). Computed tomography-guided mediastinal drainage for iatrogenic perforation of the esophagus. *Journal of Nippon Medical School = Nihon Ika Daigahu Zasshi, 73*(6), 337-340.

Mizutani, T., Tadauchi, A., Arinobe, M., Narita, Y., Kato, R., Niwa, Y., . . . Goto, H. (2010). Novel strategy for prevention of esophageal stricture after endoscopic surgery. *Hepato-Gastroenterology, 57*(102-103), 1150-1156.

Moawad, F. J., Maydonovitch, C. L., Horwhat, J. D., & Wong, R. K. (2010). Complications with pneumatic dilation. *Clinical Gastroenterology & Hepatology, 8*(8), 734-735.

Modi, P., & Rahamim, J. (2006). Use of coronary angiography wires as guide wires to avoid iatrogenic perforation during stenting of oesophageal cancers. *Endoscopy, 38*(3), 292.

Mohan, P., Ramakrishnan, R., & Venkataraman, J. (2009). An uncommon complication of savary gilliard dilation. *American Journal of Gastroenterology, 104*(11), 2865.

Montinaro, L., Paradies, G., & Leggio, S. (2002). The lortat-jacob operation by laparoscopic access to treat gastroesophageal reflux in pediatric patients. preliminary results. *Surgical Endoscopy, 16*(10), 1438-1440.

Moriwaki, Y., Sugiyama, M., Arata, S., Toyoda, H., Kosuge, T., & Suzuki, N. (2007). Therapeutic strategy for removal of a large dental prosthesis with a sharp clasp, embedded in the esophagus. *Endoscopy, 39*(Suppl 1), E303-4.

Morris, J., Duckworth, G. J., & Ridgway, G. L. (2006). Gastrointestinal endoscopy decontamination failure and the risk of transmission of blood-borne viruses: A review. *Journal of Hospital Infection, 63*(1), 1-13.

Motoyama, S., Saito, R., Kitamura, M., Suzuki, H., Nakamura, M., Okuyama, M., . . . Ogawa, J. (2003). Prospective endoscopic follow-up results of reconstructed gastric tube. *Hepato-Gastroenterology, 50*(51), 666-669.

Moukheiber, A. K., Camboulives, J., Guys, J. M., Riberi, A., Paut, O., & Triglia, J. M. (2002). Repair of a type IV laryngotracheoesophageal cleft with cardiopulmonary bypass. *Annals of Otology, Rhinology & Laryngology, 111*(12 Pt 1), 1076-1080.

Mueller, D., & Gilden, D. H. (2002). Brown-sequard syndrome after esophageal sclerotherapy and crack cocaine abuse. *Neurology, 58*(7), 1129-1130.

Muensterer, O. J., Chong, A. J., Georgeson, K. E., & Harmon, C. M. (2011). The cross-technique for single-incision pediatric endosurgical pyloromyotomy. *Surgical Endoscopy, 25*(10), 3414-3418.

Murawa, D., Murawa, P., Oszkinis, G., & Biczysko, W. (2006). Long-term consequences of total gastrectomy: Quality of life, nutritional status, bacterial overgrowth and adaptive changes in esophagojejunostomic mucosa. *Tumori, 92*(1), 26-33.

Myung Park, J., Seok Lee, I., Young Kang, J., Nyol Paik, C., Kyung Cho, Y., Woo Kim, S., . . . Chung, I. S. (2007). Acute esophageal and gastric injury: Complication of lugol's solution. *Scandinavian Journal of Gastroenterology, 42*(1), 135-137.

Nadir, A., Sahin, E., Nadir, I., Karadayi, S., & Kaptanoglu, M. (2011). Esophageal foreign bodies: 177 cases. *Diseases of the Esophagus, 24*(1), 6-9. doi:http://dx.doi.org/10.1111/j.1442-2050.2010.01085.x

Nagano, H., Ohyama, S., Sakamoto, Y., Ohta, K., Yamaguchi, T., Muto, T., & Yamaguchi, A. (2004). The endoscopic evaluation of gastritis, gastric remnant residue, and the incidence of secondary cancer after pylorus-preserving and transverse gastrectomies. *Gastric Cancer, 7*(1), 54-59.

Nakane, Y., Michiura, T., Inoue, K., Sato, M., Nakai, K., Ioka, M., & Yamamichi, K. (2004). Role of pyloroplasty after proximal gastrectomy for cancer. *Hepato-Gastroenterology, 51*(60), 1867-1871.

Nakane, Y., Michiura, T., Inoue, K., Sato, M., Nakai, K., & Yamamichi, K. (2002). Length of the antral segment in pylorus-preserving gastrectomy. *British Journal of Surgery, 89*(2), 220-224.

Namikawa, T., Kitagawa, H., Okabayashi, T., Sugimoto, T., Kobayashi, M., & Hanazaki, K. (2011). Double tract reconstruction after distal gastrectomy for gastric cancer is effective in reducing reflux esophagitis and remnant gastritis with duodenal passage preservation. *Langenbecks Archives of Surgery, 396*(6), 769-776.

Nan, G., Siyu, S., Shiwei, S., Sheng, W., & Xiang, L. (2011). Hemoclip-reinforced and EUS-assisted band ligation as an effective and safe technique to treat small GISTs in the gastric fundus. *American Journal of Gastroenterology, 106*(8), 1560-1561. doi:http://dx.doi.org/10.1038/ajg.2011.144

Nantes, O., Jimenez, F. J., Zozaya, J. M., & Vila, J. J. (2009). Increased risk of esophageal perforation in eosinophilic esophagitis. *Endoscopy, 41*(Suppl 2), E177-8.

Narula, V. K., Hazey, J. W., Renton, D. B., Reavis, K. M., Paul, C. M., Hinshaw, K. E., . . . Melvin, W. S. (2008). Transgastric instrumentation and bacterial contamination of the peritoneal cavity. *Surgical Endoscopy, 22*(3), 605-611.

Nastos, D., Chen, L. Q., Ferraro, P., Taillefer, R., & Duranceau, A. C. (2002). Long myotomy with antireflux repair for esophageal spastic disorders. *Journal of Gastrointestinal Surgery, 6*(5), 713-722.

Nasu, J., Doi, T., Endo, H., Nishina, T., Hirasaki, S., & Hyodo, I. (2005). Characteristics of metachronous multiple early gastric cancers after endoscopic mucosal resection. *Endoscopy, 37*(10), 990-993.

Ng, A., Yong, D., Hazebroek, E., Berry, H., Radajewski, R., Leibman, S., & Smith, G. S. (2009). Omission of the calibration bougie in laparoscopic repair of paraesophageal hernia. *Surgical Endoscopy, 23*(11), 2505-2508.

Nguyen, N. T., Ho, H. S., Fleming, N. W., Moore, P., Lee, S. J., Goldman, C. D., . . . Wolfe, B. M. (2002). Cardiac function during laparoscopic vs open gastric bypass. *Surgical Endoscopy, 16*(1), 78-83.

Nguyen, N. T., Longoria, M., Sabio, A., Chalifoux, S., Lee, J., Chang, K., & Wilson, S. E. (2006). Preoperative laparoscopic ligation of the left gastric vessels in preparation for esophagectomy. *Annals of Thoracic Surgery, 81*(6), 2318-2320.

Niederhauser, B. D., Andrews, J. C., Friese, J. L., Bjarnason, H., & Woodrum, D. A. (2011). Testicular artery embolization for the treatment of iatrogenic hemorrhage: Report of two cases. *Journal of Vascular & Interventional Radiology, 22*(9), 1347-1348.

Nishikawa, K., Yanaga, K., Kashiwagi, H., Hanyuu, N., & Iwabuchi, S. (2010). Significance of intraoperative endoscopy in total gastrectomy for gastric cancer. *Surgical Endoscopy, 24*(10), 2633-2636.

Noone, P. A., Waclawski, E. R., & Watt, A. D. (2006). Are endoscopy nurses at risk of infection with helicobacter pylori from their work?. *Occupational Medicine (Oxford), 56*(2), 122-128.

Norton, I. D., Gostout, C. J., Baron, T. H., Geller, A., Petersen, B. T., & Wiersema, M. J. (2002). Safety and outcome of endoscopic snare excision of the major duodenal papilla. *Gastrointestinal Endoscopy, 56*(2), 239-243.

Nozaki, I., Kubo, Y., Kurita, A., Tanada, M., Yokoyama, N., Takiyama, W., & Takashima, S. (2008). Long-term outcome after laparoscopic wedge resection for early gastric cancer. *Surgical Endoscopy, 22*(12), 2665-2669.

Nunobe, S., Hiki, N., Fukunaga, T., Tokunaga, M., Ohyama, S., Seto, Y., & Yamaguchi, T. (2007). Laparoscopy-assisted pylorus-preserving gastrectomy: Preservation of vagus nerve and infrapyloric blood flow induces less stasis. *World Journal of Surgery, 31*(12), 2335-2340.

Nunobe, S., Hiki, N., Tanimura, S., Kubota, T., Kumagai, K., Sano, T., & Yamaguchi, T. (2011). Three-step esophagojejunal anastomosis with atraumatic anvil insertion technique after laparoscopic total gastrectomy. *Journal of Gastrointestinal Surgery, 15*(9), 1520-1525.

Nunobe, S., Sasako, M., Saka, M., Fukagawa, T., Katai, H., & Sano, T. (2007). Symptom evaluation of long-term postoperative outcomes after pylorus-preserving gastrectomy for early gastric cancer. *Gastric Cancer, 10*(3), 167-172.

Obama, K., Okabe, H., Hosogi, H., Tanaka, E., Itami, A., & Sakai, Y. (2011). Feasibility of laparoscopic gastrectomy with radical lymph node dissection for gastric cancer: From a viewpoint of pancreas-related complications. *Surgery, 149*(1), 15-21.

Ocama, P., Kagimu, M. M., Odida, M., Wabinga, H., Opio, C. K., Colebunders, B., . . . Colebunders, R. (2008). Factors associated with carcinoma of the oesophagus at mulago hospital, uganda. *African Health Sciences, 8*(2), 80-84.

Oda, I., & Gotoda, T. (2009). Remarkable progress in endoscopic resection of early gastric cancer. *Journal of Gastroenterology & Hepatology, 24*(8), 1313-1314.

Ogut, F., Ersin, S., Engin, E. Z., Kirazli, T., Midilli, R., Unsal, G., & Bor, S. (2007). The effect of laparoscopic nissen fundoplication on laryngeal findings and voice quality. *Surgical Endoscopy, 21*(4), 549-554.

Ohmoto, K., & Yamamoto, S. (2003). Prevention of variceal recurrence, bleeding, and death in cirrhosis patients with hypersplenism, especially those with severe thrombocytopenia. *Hepato-Gastroenterology, 50*(54), 1766-1769.

Ohnmacht, G. A., Deschamps, C., Cassivi, S. D., Nichols, F. C.,3rd, Allen, M. S., Schleck, C. D., & Pairolero, P. C. (2006). Failed antireflux surgery: Results after reoperation. *Annals of Thoracic Surgery, 81*(6), 2050-2053.

Okabe, H., Obama, K., Tanaka, E., Nomura, A., Kawamura, J., Nagayama, S., . . . Sakai, Y. (2009). Intracorporeal esophagojejunal anastomosis after laparoscopic total gastrectomy for patients with gastric cancer. *Surgical Endoscopy, 23*(9), 2167-2171.

Olliver, J. R., Wild, C. P., Sahay, P., Dexter, S., & Hardie, L. J. (2003). Chromoendoscopy with methylene blue and associated DNA damage in barrett's oesophagus. *Lancet, 362*(9381), 373-374.

Omura, N., Kashiwagi, H., Ishibashi, Y., Yano, F., Tsuboi, K., Kawasaki, N., . . . Yanaga, K. (2006). Laparoscopic heller myotomy and dor fundoplication for the treatment of achalasia. assessment in relation to morphologic type. *Surgical Endoscopy, 20*(2), 210-213.

Omura, N., Kashiwagi, H., Tsuboi, K., Ishibashi, Y., Kawasaki, N., Yano, F., . . . Yanaga, K. (2006). Therapeutic effects of a laparoscopic heller myotomy and dor fundoplication on the chest pain associated with achalasia. *Surgery Today, 36*(3), 235-240.

Ono, S., Fujishiro, M., Niimi, K., Goto, O., Kodashima, S., Yamamichi, N., & Omata, M. (2009). Technical feasibility of endoscopic submucosal dissection for early gastric cancer in patients taking anti-coagulants or anti-platelet agents. *Digestive & Liver Disease, 41*(10), 725-728.

Ono, S., Kato, M., Ono, Y., Nakagawa, M., Nakagawa, S., Shimizu, Y., & Asaka, M. (2009). Effects of preoperative administration of omeprazole on bleeding after endoscopic submucosal dissection: A prospective randomized controlled trial. *Endoscopy, 41*(4), 299-303.

Onogi, F., Araki, H., Ibuka, T., Manabe, Y., Yamazaki, K., Nishiwaki, S., & Moriwaki, H. (2010). "Transmural air leak": A computed tomographic finding following endoscopic submucosal dissection of gastric tumors. *Endoscopy, 42*(6), 441-447.

Orlent, H., Laukens, P., & Vergauwe, P. (2008). Retrieval of a migrated esophagojejunal stent by using the double-balloon enteroscope. *Gastrointestinal Endoscopy, 67*(7), 1198-1199.

Oshita, H., Tanemura, H., Kanno, A., Kusakabe, M., Hato, T., Tomita, E., & Yamada, T. (2003). Malignant lymphoma occurring in the residual stomach following gastrectomy: Plus discussion based on the literature in japan. *Gastric Cancer, 6*(1), 60-63.

Otsuka, K., Murakami, M., Aoki, T., Tajima, Y., Kaetsu, T., & Lefor, A. T. (2005). Minimally invasive treatment of stomach cancer. *Cancer Journal, 11*(1), 18-25.

Owada, K. (2005). Use of a hydrofiber dressing to manage PEG sites. *Advances in Skin & Wound Care, 18*(4), 183-184.

Ozaslan, E. (2010). Primary incision of esophageal strictures: The technical details?. *Gastrointestinal Endoscopy, 71*(4), 883.

Ozogul, Y. B., Ozer, I., Orug, T., Ulas, M., Ercan, M., Parlak, E., . . . Akoglu, M. (2009). Spontaneous hepaticoduodenal fistula functioning like a bilioenteric anastomosis following bile duct injury: Case report. *Turkish Journal of Gastroenterology, 20*(3), 220-223.

Pacifico, R. J., Wang, K. K., Wongkeesong, L. M., Buttar, N. S., & Lutzke, L. S. (2003). Combined endoscopic mucosal resection and photodynamic therapy versus esophagectomy for management of early adenocarcinoma in barrett's esophagus. *Clinical Gastroenterology & Hepatology, 1*(4), 252-257.

Pai, R. D., Carr-Locke, D. L., & Thompson, C. C. (2007). Endoscopic evaluation of the defunctionalized stomach by using ShapeLock technology (with video). *Gastrointestinal Endoscopy, 66*(3), 578-581.

Palanivelu, C., Prakash, A., Parthasarathi, R., Senthilkumar, R., Senthilnathan, P. R., & Rajapandian, S. (2007). Laparoscopic esophagogastrectomy without thoracic or cervical access for adenocarcinoma of the gastroesophageal junction: An indian experience from a tertiary center. *Surgical Endoscopy, 21*(1), 16-20.

Pandolfino, J. E., Curry, J., Shi, G., Joehl, R. J., Brasseur, J. G., & Kahrilas, P. J. (2005). Restoration of normal distensive characteristics of the esophagogastric junction after fundoplication. *Annals of Surgery, 242*(1), 43-48.

Papachristou, G. I., Abu-Elmagd, K. M., Bond, G., Costa, G., Mazariegos, G. V., Sanders, M. K., & Slivka, A. (2011). Pancreaticobiliary complications after composite visceral transplantation: Incidence, risk, and management strategies. *Gastrointestinal Endoscopy, 73*(6), 1165-1173.

Papachristou, G. I., Abu-Elmagd, K. M., Bond, G., Costa, G., Mazariegos, G. V., Sanders, M. K., & Slivka, A. (2011). Pancreaticobiliary complications after composite visceral transplantation: Incidence, risk, and management strategies. *Gastrointestinal Endoscopy, 73*(6), 1165-1173.

Parc, Y., Mabrut, J. Y., Shields, C., & Mallorca, G. (2011). Surgical management of the duodenal manifestations of familial adenomatous polyposis. *British Journal of Surgery, 98*(4), 480-484. doi:http://dx.doi.org/10.1002/bjs.7374

Parodi, A., Repici, A., Pedroni, A., Blanchi, S., & Conio, M. (2010). Endoscopic management of GI perforations with a new over-the-scope clip device (with videos). *Gastrointestinal Endoscopy, 72*(4), 881-886.

Parrilla, P., Martinez de Haro, L. F., Ortiz, A., Munitiz, V., Molina, J., Bermejo, J., & Canteras, M. (2003). Long-term results of a randomized prospective study comparing medical and surgical treatment of barrett's esophagus. *Annals of Surgery, 237*(3), 291-298.

Patel, S., Chang, G. L., Messersmith, R., & Chi, K. D. (2007). Conservative treatment of nonresolving pneumoperitoneum after endoscopic procedures, by computed tomography (CT)-guided needle decompression. *Endoscopy, 39*(Suppl 1), E170.

Peart, O. (2005). Candid camera. *Radiologic Technology, 76*(4), 328.

Pennington, C. (2002). To PEG or not to PEG. *Clinical Medicine, 2*(3), 250-255.

Pensabene, L., & Nurko, S. (2008). Approach to the child who has persistent dysphagia after surgical treatment for esophageal achalasia. *Journal of Pediatric Gastroenterology & Nutrition, 47*(1), 92-97.

Pereira-Graterol, F., & Moreno-Portillo, M. (2006). Distal esophageal perforation repair during laparoscopic esophagomyotomy: Evaluation of outcomes and review of surgical technique. *Journal of Laparoendoscopic & Advanced Surgical Techniques.Part A, 16*(6), 587-592.

Pereira-Lima, J. C., Zanette, M., Lopes, C. V., & de Mattos, A. A. (2003). The influence of endoscopic variceal ligation on the portal pressure gradient in cirrhotics. *Hepato-Gastroenterology, 50*(49), 102-106.

Perger, L., Fuchs, J. R., Komidar, L., & Mooney, D. P. (2009). Impact of surgical approach on outcome in 622 consecutive pyloromyotomies at a pediatric teaching institution. *Journal of Pediatric Surgery, 44*(11), 2119-2125.

Perry, K. A., Enestvedt, C. K., Pham, T., Welker, M., Jobe, B. A., Hunter, J. G., & Sheppard, B. C. (2009). Comparison of laparoscopic inversion esophagectomy and open transhiatal esophagectomy for high-grade dysplasia and stage I esophageal adenocarcinoma. *Archives of Surgery, 144*(7), 679-684.

Pesko, P., Sabljak, P., Bjelovic, M., Stojakov, D., Simic, A., Nenadic, B., . . . Djukic, V. (2006). Surgical treatment and clinical course of patients with hypopharyngeal carcinoma. *Diseases of the Esophagus, 19*(4), 248-253.

Peters, J. H., Craanen, M. E., van der Peet, D. L., Cuesta, M. A., & Mulder, C. J. (2006). Self-expanding metal stents for the treatment of intrathoracic esophageal anastomotic leaks following esophagectomy. *American Journal of Gastroenterology, 101*(6), 1393-1395.

Peters, J. H., & Watson, T. A. (2011). Endoscopic mucosal resection of barrett's esophagus and early esophageal cancer. *Journal of Gastrointestinal Surgery, 15*(8), 1299-1302.

Pohl, J., Borgulya, M., Lorenz, D., & Ell, C. (2010). Endoscopic closure of postoperative esophageal leaks with a novel over-the-scope clip system. *Endoscopy, 42*(9), 757-759.

Polkowski, M., Gerke, W., Jarosz, D., Nasierowska-Guttmejer, A., Rutkowski, P., Nowecki, Z. I., . . . Butruk, E. (2009). Diagnostic yield and safety of endoscopic ultrasound-guided trucut [corrected] biopsy in patients with gastric submucosal tumors: A prospective study. *Endoscopy, 41*(4), 329-334.

Portale, G., Costantini, M., Rizzetto, C., Guirroli, E., Ceolin, M., Salvador, R., . . . Zaninotto, G. (2005). Long-term outcome of laparoscopic heller-dor surgery for esophageal achalasia: Possible detrimental role of previous endoscopic treatment. *Journal of Gastrointestinal Surgery, 9*(9), 1332-1339.

Portale, G., Costantini, M., Rizzetto, C., Guirroli, E., Ceolin, M., Salvador, R., . . . Zaninotto, G. (2005). Long-term outcome of laparoscopic heller-dor surgery for esophageal achalasia: Possible detrimental role of previous endoscopic treatment. *Journal of Gastrointestinal Surgery, 9*(9), 1332-1339.

Postma, G. N. (2003). RE: Endoscopic diverticulotomy of zenker's diverticulum: Management and complications (dysphagia 17:34-39). *Dysphagia, 18*(3), 227-8.

Pouw, R. E., Seewald, S., Gondrie, J. J., Deprez, P. H., Piessevaux, H., Pohl, H., . . . Bergman, J. J. (2010). Stepwise radical endoscopic resection for eradication of barrett's oesophagus with early neoplasia in a cohort of 169 patients. *Gut, 59*(9), 1169-1177.

Pouw, R. E., van Vilsteren, F. G., Peters, F. P., Herrero, L. A., Ten Kate, F. J., Visser, M., . . . Bergman, J. J. (2011). Randomized trial on endoscopic resection-cap versus multiband mucosectomy for piecemeal endoscopic resection of early barrett's neoplasia. *Gastrointestinal Endoscopy, 74*(1), 35-43.

Prasad, G. A., Reddy, J. G., Boyd-Enders, F. T., Schmoll, J. A., Lewis, J. T., & Wongkeesong, L. M. (2008). Predictors of recurrent esophageal food impaction: A case-control study. *Journal of Clinical Gastroenterology, 42*(7), 771-775.

Probst, A., Maerkl, B., Bittinger, M., & Messmann, H. (2010). Gastric ischemia following endoscopic submucosal dissection of early gastric cancer. *Gastric Cancer, 13*(1), 58-61.

Probst, A., Pommer, B., Golger, D., Anthuber, M., Arnholdt, H., & Messmann, H. (2010). Endoscopic submucosal dissection in gastric neoplasia - experience from a european center. *Endoscopy, 42*(12), 1037-1044.

Puntambekar, S. P., Agarwal, G. A., Joshi, S. N., Rayate, N. V., Sathe, R. M., & Patil, A. M. (2010). Thoracolaparoscopy in the lateral position for esophageal cancer: The experience of a single institution with 112 consecutive patients. *Surgical Endoscopy, 24*(10), 2407-2414.

Putcha, R. V., & Burdick, J. S. (2003). Management of iatrogenic perforation. *Gastroenterology Clinics of North America, 32*(4), 1289-1309.

Qureshi, S., Ghazanfar, S., Leghari, A., Tariq, F., Niaz, S. K., & Quraishy, M. S. (2010). Benign esophageal strictures: Behaviour, pattern and response to dilatation. *JPMA - Journal of the Pakistan Medical Association, 60*(8), 656-660.

Rahelic, V., Zelic, M., Grbas, H., Depolo, A., & Kezele, B. (2009). Bouveret's syndrome--case report. *Zentralblatt Fur Chirurgie, 134*(3), 260-262.

Raju, G. S. (2009). Endoscopic closure of gastrointestinal leaks. *American Journal of Gastroenterology, 104*(5), 1315-1320.

Raman, S., Siddiq, T. O., Joseph, A., Jones, A. H., Haray, P. N., & Masoud, A. G. (2004). Vaccination metastasis following percutaneous endoscopic gastrostomy. *Hospital Medicine (London), 65*(4), 246-247.

Ramaswami, G., Jain, P. K., & Talati, V. R. (2007). Oesophagitis dissecans superficialis complicating repeated rigid oesophagoscopy and dilatation. *Journal of Laryngology & Otology, 121*(1), 92-93.

Rasmussen, J. J., Fuller, W., & Ali, M. R. (2007). Marginal ulceration after laparoscopic gastric bypass: An analysis of predisposing factors in 260 patients. *Surgical Endoscopy, 21*(7), 1090-1094.

Razeghi, S., Lang, T., & Behrens, R. (2002). Influence of percutaneous endoscopic gastrostomy on gastroesophageal reflux: A prospective study in 68 children. *Journal of Pediatric Gastroenterology & Nutrition, 35*(1), 27-30.

Rebecchi, F., Rocchietto, S., Giaccone, C., Talha, A., & Morino, M. (2011). Gastroesophageal reflux disease and esophageal motility in morbidly obese patients submitted to laparoscopic adjustable silicone gastric banding or laparoscopic vertical banded gastroplasty. *Surgical Endoscopy, 25*(3), 795-803.

Repici, A., Hassan, C., Carlino, A., Pagano, N., Zullo, A., Rando, G., . . . Malesci, A. (2010). Endoscopic submucosal dissection in patients with early esophageal squamous cell carcinoma: Results from a prospective western series. *Gastrointestinal Endoscopy, 71*(4), 715-721.

Repici, A., Pagano, N., Fumagalli, U., Peracchia, A., Narne, S., Malesci, A., & Rosati, R. (2011). Transoral treatment of zenker diverticulum: Flexible endoscopy versus endoscopic stapling. A retrospective comparison of outcomes. *Diseases of the Esophagus, 24*(4), 235-239. doi:http://dx.doi.org/10.1111/j.1442-2050.2010.01143.x

Ribeiro-Mourao, F., Pimentel-Nunes, P., & Dinis-Ribeiro, M. (2010). Endoscopic submucosal dissection for gastric lesions: Results of an european inquiry. *Endoscopy, 42*(10), 814-819.

Richards, W. O., Torquati, A., Holzman, M. D., Khaitan, L., Byrne, D., Lutfi, R., & Sharp, K. W. (2004). Heller myotomy versus heller myotomy with dor fundoplication for achalasia: A prospective randomized double-blind clinical trial. *Annals of Surgery, 240*(3), 405-412.

Richter-Schrag, H. J., Richter, S., Ruthmann, O., Olschewski, M., Hopt, U. T., & Fischer, A. (2011). Risk factors and complications following percutaneous endoscopic gastrostomy: A case series of 1041 patients. *Canadian Journal of Gastroenterology, 25*(4), 201-206.

Richtsmeier, W. J., & Monzon, J. R. (2002). Postendoscopic zenker esophagodiverticulostomy leaks associated with a specific stapler cartridge. *Archives of Otolaryngology -- Head & Neck Surgery, 128*(2), 137-140.

Rino, Y., Tokunaga, M., Morinaga, S., Onodera, S., Tomiyama, I., Imada, T., & Takanashi, Y. (2002). The buried bumper syndrome: An early complication of percutaneous endoscopic gastrostomy. *Hepato-Gastroenterology, 49*(46), 1183-1184.

Ritchie, C. S., Wilcox, C. M., & Kvale, E. (2007). Ethical and medicolegal issues related to percutaneous endoscopic gastrostomy placement. *Gastrointestinal Endoscopy Clinics of North America, 17*(4), 805-815.

Roffman, E., Jalisi, S., Hybels, R., & Catalano, P. (2002). Failed extraction of a sharp esophageal foreign body with a flexible endoscope: A case report and review of the literature. *Archives of Otolaryngology -- Head & Neck Surgery, 128*(9), 1096-1098.

Romeo, E., Foschia, F., de Angelis, P., Caldaro, T., Federici di Abriola, G., Gambitta, R., . . . Dall'oglio, L. (2011). Endoscopic management of congenital esophageal stenosis. *Journal of Pediatric Surgery, 46*(5), 838-841.

Romeo, E., Torroni, F., Foschia, F., De Angelis, P., Caldaro, T., Santi, M. R., . . . Dall'Oglio, L. (2011). Surgery or endoscopy to treat duodenal duplications in children. *Journal of Pediatric Surgery, 46*(5), 874-878.

Rossetti, G., Brusciano, L., Amato, G., Maffettone, V., Napolitano, V., Russo, G., . . . Del Genio, A. (2005). A total fundoplication is not an obstacle to esophageal emptying after heller myotomy for achalasia: Results of a long-term follow up. *Annals of Surgery, 241*(4), 614-621.

Ruby, R. S., Wells, D., Sankaran, S., Good, E., Jongnarangsin, K., Ebinger, M., . . . Chugh, A. (2009). Prevalence of fever in patients undergoing left atrial ablation of atrial fibrillation guided by barium esophagraphy. *Journal of Cardiovascular Electrophysiology, 20*(8), 883-887.

Ryom, P., Ravn, J. B., Penninga, L., Schmidt, S., Iversen, M. G., Skov-Olsen, P., & Kehlet, H. (2011). Aetiology, treatment and mortality after oesophageal perforation in denmark. *Danish Medical Bulletin, 58*(5), A4267.

Saadeddin, A., Freshwater, D. A., Fisher, N. C., & Jones, B. J. (2005). Antibiotic prophylaxis for percutaneous endoscopic gastrostomy for non-malignant conditions: A double-blind prospective randomized controlled trial. *Alimentary Pharmacology & Therapeutics, 22*(6), 565-570.

Sacks, B. C., Mattar, S. G., Qureshi, F. G., Eid, G. M., Collins, J. L., Barinas-Mitchell, E. J., . . . Ramanathan, R. C. (2006). Incidence of marginal ulcers and the use of absorbable anastomotic sutures in laparoscopic roux-en-Y gastric bypass. *Surgery for Obesity & Related Diseases, 2*(1), 11-16.

Saidel-Odes, L., Borer, A., Riesenberg, K., & Schlaeffer, F. (2007). Shewanella spp. infection following treatment for upper gastrointestinal bleeding. *Scandinavian Journal of Infectious Diseases, 39*(4), 360-361.

Sakuramoto, S., Kikuchi, S., Futawatari, N., Katada, N., Moriya, H., Hirai, K., . . . Watanabe, M. (2009). Laparoscopy-assisted pancreas- and spleen-preserving total gastrectomy for gastric cancer as compared with open total gastrectomy. *Surgical Endoscopy, 23*(11), 2416-2423.

Salimath, J., Rosenthal, R. J., & Szomstein, S. (2009). Laparoscopic remnant gastrectomy as a novel approach for treatment of gastrogastric fistula. *Surgical Endoscopy, 23*(11), 2591-2595.

Salminen, P., Gullichsen, R., & Laine, S. (2009). Use of self-expandable metal stents for the treatment of esophageal perforations and anastomotic leaks. *Surgical Endoscopy, 23*(7), 1526-1530.

Sanchez, A., Reza, M., Blasco, J. A., & Callejo, D. (2010). Effectiveness, safety, and cost-effectiveness of photodynamic therapy in barrett's esophagus: A systematic review. *Diseases of the Esophagus, 23*(8), 633-640. doi:http://dx.doi.org/10.1111/j.1442-2050.2010.01078.x

Sancho, J., Servera, E., Chiner, E., Banuls, P., Gomez-Merino, E., Sancho-Chust, J. N., & Marin, J. (2010). Noninvasive respiratory muscle aids during PEG placement in ALS patients with severe ventilatory impairment. *Journal of the Neurological Sciences, 297*(1-2), 55-59.

Sanders, D. S., Leeds, J. S., & Drew, K. (2008). The role of percutaneous endoscopic gastrostomy in patients with dementia. *British Journal of Nursing, 17*(9), 588-594.

Sandlin, D. (2003). Perianesthesia nursing care considerations for laparoscopic adjustable gastric banding minimally invasive surgical patients. *Journal of PeriAnesthesia Nursing, 18*(4), 272-276.

Sandmann, M., Heike, M., & Faehndrich, M. (2011). Application of the OTSC system for the closure of fistulas, anastomosal leakages and perforations within the gastrointestinal tract. *Zeitschrift Fur Gastroenterologie, 49*(8), 981-985.

Sasaki, T., Fukumori, D., Sakai, K., Sato, M., Ohmori, H., & Yamamoto, F. (2004). The safety and feasibility of percutaneous endoscopic gastrostomy placement. *Hepato-Gastroenterology, 51*(58), 1062-1065.

Sause, A., Tutdibi, O., Pomsel, K., Dinh, W., Futh, R., Lankisch, M., . . . Muller, M. (2010). Limiting esophageal temperature in radiofrequency ablation of left atrial tachyarrhythmias results in low incidence of thermal esophageal lesions. *BMC Cardiovascular Disorders, 10*, 52.

Saxena, P., Konstantinov, I. E., Stewart, N. M., & Newman, M. A. (2008). Palliative surgical management of iatrogenic oesophageal perforation in the setting of malignant disease. *Heart, Lung & Circulation, 17*(5), 434-436.

Scheepers, J. J., van der Peet, D. L., Veenhof, A. A., Heijnen, B., & Cuesta, M. A. (2010). Systematic approach of postoperative gastric conduit complications after esophageal resection. *Diseases of the Esophagus, 23*(2), 117-121.

Scheffer, R. C., Samsom, M., Hebbard, G. S., & Gooszen, H. G. (2006). Effects of partial (belsey mark IV) and complete (nissen) fundoplication on proximal gastric function and esophagogastric junction dynamics. *American Journal of Gastroenterology, 101*(3), 479-487.

Schembre, D., Arai, A., Levy, S., Farrell-Ross, M., & Low, D. (2010). Quality of life after esophagectomy and endoscopic therapy for barrett's esophagus with dysplasia. *Diseases of the Esophagus, 23*(6), 458-464.

Scher, R. L. (2003). Endoscopic staple diverticulostomy for recurrent zenker's diverticulum. *Laryngoscope, 113*(1), 63-67.

Schirmer, B., Erenoglu, C., & Miller, A. (2002). Flexible endoscopy in the management of patients undergoing roux-en-Y gastric bypass. *Obesity Surgery, 12*(5), 634-638.

Schooler, V. C., Ragland, B., Lazenby, A., & Eloubeidi, M. A. (2004). Post-transplantation lymphoproliferative disorder. *Gastrointestinal Endoscopy, 60*(6), 989-990.

Schrag, S. P., Sharma, R., Jaik, N. P., Seamon, M. J., Lukaszczyk, J. J., Martin, N. D., . . . Stawicki, S. P. (2007). Complications related to percutaneous endoscopic gastrostomy (PEG) tubes. A comprehensive clinical review. *Journal of Gastrointestinal & Liver Diseases, 16*(4), 407-418.

Schubert, D., Scheidbach, H., Kuhn, R., Wex, C., Weiss, G., Eder, F., . . . Pross, M. (2005). Endoscopic treatment of thoracic esophageal anastomotic leaks by using silicone-covered, self-expanding polyester stents. *Gastrointestinal Endoscopy, 61*(7), 891-896.

Schwacha, H., Kern, W. V., & Wagner, D. (2006). Perforation of a dacron vascular endoprosthesis into the duodenum. *Endoscopy, 38*(Suppl 2), E51.

Schweigert, M., Dubecz, A., Stadlhuber, R. J., Muschweck, H., & Stein, H. J. (2011). Risk of stent-related aortic erosion after endoscopic stent insertion for intrathoracic anastomotic leaks after esophagectomy. *Annals of Thoracic Surgery, 92*(2), 513-518.

Seewald, S., Ang, T. L., Gotoda, T., & Soehendra, N. (2008). Total endoscopic resection of barrett esophagus. *Endoscopy, 40*(12), 1016-1020.

Seewald, S., & Soehendra, N. (2006). Perforation: Part and parcel of endoscopic resection?. *Gastrointestinal Endoscopy, 63*(4), 602-605.

Seewoodhary, J. (2010). Gastrointestinal haemorrhage in protein-losing enteropathy associated with the fontan circulation. *Qjm, 103*(5), 347-349.

Seinela, L., Reinikainen, P., & Ahvenainen, J. (2003). Effect of upper gastrointestinal endoscopy on cardiopulmonary changes in very old patients. *Archives of Gerontology & Geriatrics, 37*(1), 25-32.

Seo, E. H., Jung, M. K., Park, M. J., Park, K. S., Jeon, S. W., Cho, C. M., . . . Choi, Y. H. (2008). Covered expandable nitinol stents for malignant gastroduodenal obstructions. *Journal of Gastroenterology & Hepatology, 23*(7 Pt 1), 1056-1062.

Sexton, J. A., Pierce, R. A., Halpin, V. J., Eagon, J. C., Hawkins, W. G., Linehan, D. C., . . . Matthews, B. D. (2008). Laparoscopic gastric resection for gastrointestinal stromal tumors. *Surgical Endoscopy, 22*(12), 2583-2587.

Shaheen, N. J., Greenwald, B. D., Peery, A. F., Dumot, J. A., Nishioka, N. S., Wolfsen, H. C., . . . Lightdale, C. J. (2010). Safety and efficacy of endoscopic spray cryotherapy for barrett's esophagus with high-grade dysplasia. *Gastrointestinal Endoscopy, 71*(4), 680-685.

Shaheen, N. J., Peery, A. F., Overholt, B. F., Lightdale, C. J., Chak, A., Wang, K. K., . . . AIM Dysplasia, I. (2010). Biopsy depth after radiofrequency ablation of dysplastic barrett's esophagus. *Gastrointestinal Endoscopy, 72*(3), 490-496.e1.

Sharma, B., Baxter, N., & Grantcharov, T. (2010). Outcomes after laparoscopic techniques in major gastrointestinal surgery. *Current Opinion in Critical Care, 16*(4), 371-376.

Sheehan, J. J., Hill, A. D., Fanning, N. P., Healy, C., McDermott, E. W., O'Donoghue, D. P., & O'Higgins, N. J. (2003). Percutaneous endoscopic gastrostomy: 5 years of clinical experience on 238 patients. *Irish Medical Journal, 96*(9), 265-267.

Shiba, M., Higuchi, K., Kadouchi, K., Montani, A., Yamamori, K., Okazaki, H., . . . Arakawa, T. (2005). Risk factors for bleeding after endoscopic mucosal resection. *World Journal of Gastroenterology, 11*(46), 7335-7339.

Shimizu, Y., Kato, M., Yamamoto, J., Nakagawa, S., Komatsu, Y., Tsukagoshi, H., . . . Asaka, M. (2004). Endoscopic clip application for closure of esophageal perforations caused by EMR. *Gastrointestinal Endoscopy, 60*(4), 636-639.

Shimotakahara, A., Yamataka, A., Yanai, T., Kobayashi, H., Okazaki, T., Lane, G. J., & Miyano, T. (2005). Roux-en-Y hepaticojejunostomy or hepaticoduodenostomy for biliary reconstruction during the surgical treatment of choledochal cyst: Which is better?. *Pediatric Surgery International, 21*(1), 5-7.

Shimura, T., Joh, T., Sasaki, M., Kataoka, H., Tanida, S., Ogasawara, N., . . . Saida, Y. (2007). Endoscopic submucosal dissection is useful and safe for intramucosal gastric neoplasms in the elderly. *Acta Gastroenterologica Belgica, 70*(4), 323-330.

Shimura, T., Kataoka, H., Sasaki, M., Yamada, T., Hayashi, K., Togawa, S., . . . Joh, T. (2009). Feasibility of self-expandable metallic stent plus chemotherapy for metastatic gastric cancer with pyloric stenosis. *Journal of Gastroenterology & Hepatology, 24*(8), 1358-1364.

Shirakawa, Y., Naomoto, Y., Noma, K., Ono, R., Nobuhisa, T., Kobayashi, M., . . . Tanaka, N. (2004). Free jejunal graft for hypopharyngeal and esophageal reconstruction. *Langenbecks Archives of Surgery, 389*(5), 387-390.

Shirley, R. M., & Eloubeidi, M. A. (2007). Successful closure of a benign postsurgical esophagocutaneous fistula by temporary placement of a self-expanding plastic stent. *Gastrointestinal Endoscopy, 66*(4), 840-843.

Shono, Y., Tsuji, T., Horiuchi, T., Inoue, M., & Tabuse, K. (2007). Laparoscopic gastropexy for chronic gastric volvulus. *Hepato-Gastroenterology, 54*(74), 655-656.

Siersema, P. D. (2005). Treatment of esophageal perforations and anastomotic leaks: The endoscopist is stepping into the arena. *Gastrointestinal Endoscopy, 61*(7), 897-900.

Siersema, P. D., Marcon, N., & Vakil, N. (2003). Metal stents for tumors of the distal esophagus and gastric cardia. *Endoscopy, 35*(1), 79-85.

Silas, A. M., Pearce, L. F., Lestina, L. S., Grove, M. R., Tosteson, A., Manganiello, W. D., . . . Gordon, S. R. (2005). Percutaneous radiologic gastrostomy versus percutaneous endoscopic gastrostomy: A comparison of indications, complications and outcomes in 370 patients. *European Journal of Radiology, 56*(1), 84-90.

Simadibrata, M., Syam, A. F., Fauzi, A., Abdullah, M., & Rani, A. A. (2011). Side effects of endoscopic variceal ligation by using indonesian endoscopic ligator versus endoscopic variceal sclerotherapy. *Acta Medica Indonesiana, 43*(1), 12-17.

Siyu, S., Sheng, W., Guoxin, W., Nan, G., & Jingang, L. (2010). Gastric perforations after ligation of GI stromal tumors in the gastric fundus. *Gastrointestinal Endoscopy, 72*(3), 615-616.

Slim, R., Koussa, S., Awada, H., Yaghi, C., Honein, K., & Sayegh, R. (2009). Migration in two directions. *Journal Medical Libanais - Lebanese Medical Journal, 57*(4), 271-273.

Smith, B. L. (2005). Bariatric surgery. it's no easy fix. *RN, 68*(6), 58-63.

Smith, M. A., Kluck, E., Jagannath, S., & Yang, S. C. (2010). Giant multi-polypoid liposarcoma of the esophagus: An atypical presentation. *Annals of Thoracic Surgery, 89*(2), 610-612.

Smith, M. A., Patterson, G. A., & Cooper, J. D. (2006). Dysphagia in the young male: The ringed esophagus. *Annals of Thoracic Surgery, 81*(1), 354-356.

Snyder, C. W., Burton, R. C., Brown, L. E., Kakade, M. S., Finan, K. R., & Hawn, M. T. (2009). Multiple preoperative endoscopic interventions are associated with worse outcomes after laparoscopic heller myotomy for achalasia. *Journal of Gastrointestinal Surgery, 13*(12), 2095-2103.

Soehendra, N., Seewald, S., Groth, S., Omar, S., Seitz, U., Zhong, Y., . . . Schroeder, S. (2006). Use of modified multiband ligator facilitates circumferential EMR in barrett's esophagus (with video). *Gastrointestinal Endoscopy, 63*(6), 847-852.

Sofi, A., Filipiak, C., Sodeman, T., Ahmad, U., Bawany, M., & Daboul, I. (2011). Comparison of esophageal placement of bravo capsule system under direct endoscopic guidance with conventional placement method. *Turkish Journal of Gastroenterology, 22*(3), 243-248.

Song, K. Y., Kim, T. H., Kim, S. N., & Park, C. H. (2008). Laparoscopic repair of perforated duodenal ulcers: The simple "one-stitch" suture with omental patch technique. *Surgical Endoscopy, 22*(7), 1632-1635.

Spencer, H. L., & Riley, S. (2003). Investigating and managing chronic dysphagia: Dysphagia should prompt urgent gastroenterological referral. *BMJ, 326*(7399), 1147-1148.

Spilde, T. L., St Peter, S. D., Keckler, S. J., Holcomb, G. W.,3rd, Snyder, C. L., & Ostlie, D. J. (2008). Open vs laparoscopic repair of congenital duodenal obstructions: A concurrent series. *Journal of Pediatric Surgery, 43*(6), 1002-1005.

St Jean, M. R., Dunkle-Blatter, S. E., & Petrick, A. T. (2006). Laparoscopic management of perforated marginal ulcer after laparoscopic roux-en-Y gastric bypass. *Surgery for Obesity & Related Diseases, 2*(6), 668.

St Peter, S. D., Barnhart, D. C., Ostlie, D. J., Tsao, K., Leys, C. M., Sharp, S. W., . . . Holcomb, G. W.,3rd. (2011). Minimal vs extensive esophageal mobilization during laparoscopic fundoplication: A prospective randomized trial. *Journal of Pediatric Surgery, 46*(1), 163-168.

St Peter, S. D., Valusek, P. A., Calkins, C. M., Shew, S. B., Ostlie, D. J., & Holcomb, G. W.,3rd. (2007). Use of esophagocrural sutures and minimal esophageal dissection reduces the incidence of postoperative transmigration of laparoscopic nissen fundoplication wrap. *Journal of Pediatric Surgery, 42*(1), 25-29.

Stefanidis, D., Hope, W. W., Kohn, G. P., Reardon, P. R., Richardson, W. S., Fanelli, R. D., & SAGES Guidelines, C. (2010). Guidelines for surgical treatment of gastroesophageal reflux disease. *Surgical Endoscopy, 24*(11), 2647-2669.

Stein, H. J., & Feith, M. (2005). Surgical strategies for early esophageal adenocarcinoma. *Best Practice & Research in Clinical Gastroenterology, 19*(6), 927-940.

Straumann, A., Bussmann, C., Zuber, M., Vannini, S., Simon, H. U., & Schoepfer, A. (2008). Eosinophilic esophagitis: Analysis of food impaction and perforation in 251 adolescent and adult patients. *Clinical Gastroenterology & Hepatology, 6*(5), 598-600.

Sugai, K., Kajiwara, E., Mochizuki, Y., Noma, E., Nakashima, J., Uchimura, K., & Sadoshima, S. (2005). Intramural duodenal hematoma after endoscopic therapy for a bleeding duodenal ulcer in a patient with liver cirrhosis. *Internal Medicine, 44*(9), 954-957.

Sugiyama, M., Abe, N., Izumisato, Y., Masaki, T., Mori, T., & Atomi, Y. (2003). Risk factors for acute pancreatitis after endoscopic papillary balloon dilation. *Hepato-Gastroenterology, 50*(54), 1796-1798.

Sumida, A., Yanai, H., Tanioka, Y., Sakaguchi, E., & Yutoku, K. (2008). Stenosis of gastric body as a rare complication after endoscopic submucosal dissection for multiple gastric epithelial tumors. *Journal of Gastrointestinal Cancer, 39*(1-4), 34-36.

Sun, S., Ge, N., Wang, C., Wang, M., & Lu, Q. (2007). Endoscopic band ligation of small gastric stromal tumors and follow-up by endoscopic ultrasonography. *Surgical Endoscopy, 21*(4), 574-578.

Sutton, C. D., White, S. A., Marshall, L. J., Berry, D. P., & Veitch, P. S. (2002). Endoscopic-assisted intrathoracic oesophagogastrostomy without thoracotomy for tumours of the lower oesophagus and cardia. *European Journal of Surgical Oncology, 28*(1), 46-48.

Suzuki, T., Minami, H., Komatsu, T., Masusda, R., Kobayashi, Y., Sakamoto, A., . . . Serada, K. (2010). Prolonged carbon dioxide insufflation under general anesthesia for endoscopic submucosal dissection. *Endoscopy, 42*(12), 1021-1029.

Sweet, M. P., Nipomnick, I., Gasper, W. J., Bagatelos, K., Ostroff, J. W., Fisichella, P. M., . . . Patti, M. G. (2008). The outcome of laparoscopic heller myotomy for achalasia is not influenced by the degree of esophageal dilatation. *Journal of Gastrointestinal Surgery, 12*(1), 159-165.

Swinnen, J., Eisendrath, P., Rigaux, J., Kahegeshe, L., Lemmers, A., Le Moine, O., & Deviere, J. (2011). Self-expandable metal stents for the treatment of benign upper GI leaks and perforations. *Gastrointestinal Endoscopy, 73*(5), 890-899.

Takada, K., Hamada, Y., Watanabe, K., Tanano, A., Tokuhara, K., & Kamiyama, Y. (2005). Duodenogastric reflux following biliary reconstruction after excision of choledochal cyst. *Pediatric Surgery International, 21*(1), 1-4.

Takahashi, H., Arimura, Y., Okahara, S., Uchida, S., Ishigaki, S., Tsukagoshi, H., . . . Hosokawa, M. (2011). Risk of perforation during dilation for esophageal strictures after endoscopic resection in patients with early squamous cell carcinoma. *Endoscopy, 43*(3), 184-189.

Takahashi, T., Yoshida, M., Kubota, T., Otani, Y., Saikawa, Y., Ishikawa, H., . . . Kitajima, M. (2005). Morphologic analysis of gastroesophageal reflux diseases in patients after distal gastrectomy. *World Journal of Surgery, 29*(1), 50-57.

Takayama, T., Takayama, K., Inoue, N., Funakoshi, S., Serizawa, H., Watanabe, N., . . . Hibi, T. (2009). Prediction of survival and complications after percutaneous endoscopic gastrostomy in an individual by using clinical factors with an artificial neural network system. *European Journal of Gastroenterology & Hepatology, 21*(11), 1279-1285.

Takizawa, K., Oda, I., Gotoda, T., Yokoi, C., Matsuda, T., Saito, Y., . . . Ono, H. (2008). Routine coagulation of visible vessels may prevent delayed bleeding after endoscopic submucosal dissection--an analysis of risk factors. *Endoscopy, 40*(3), 179-183.

Tamiya, Y., Nakahara, K., Kominato, K., Serikawa, O., Watanabe, Y., Tateishi, H., . . . Sata, M. (2010). Pneumomediastinum is a frequent but minor complication during esophageal endoscopic submucosal dissection. *Endoscopy, 42*(1), 8-14.

Tanaka, K., Aoki, M., Hamada, Y., Kosaka, R., Noda, T., Imoto, I., & Takei, Y. (2009). Wernicke's encephalopathy caused by pyloric stenosis after endoscopic submucosal dissection. *Gastrointestinal Endoscopy, 69*(6), 1170-1171.

Tanaka, K., Toyoda, H., Hamada, Y., Aoki, M., Kosaka, R., Noda, T., . . . Takei, Y. (2007). A relapse case of acute necrotizing esophagitis. *Endoscopy, 39*(Suppl 1), E305.

Tanaka, N., Katai, H., Saka, M., Morita, S., & Fukagawa, T. (2011). Laparoscopy-assisted pylorus-preserving gastrectomy: A matched case-control study. *Surgical Endoscopy, 25*(1), 114-118.

Tang, S. J., Tang, L., Jazrawi, S. F., Meyer, D., Wait, M. A., & Myers, L. L. (2009). Iatrogenic esophageal submucosal dissection after attempted diagnostic gastroscopy (with videos). *Laryngoscope, 119*(1), 36-38.

Tanimura, S., Higashino, M., Fukunaga, Y., & Osugi, H. (2003). Laparoscopic gastrectomy with regional lymph node dissection for upper gastric cancer. *Gastric Cancer, 6*(1), 64-68.

Tanizawa, Y., Bando, E., Kawamura, T., Tokunaga, M., Ono, H., & Terashima, M. (2010). Early postoperative anastomotic hemorrhage after gastrectomy for gastric cancer. *Gastric Cancer, 13*(1), 50-57.

Tayyem, R., Siddiqui, T., & Ali, A. (2009). Midgut malrotation encountered during laparoscopic roux-en-y gastric bypass. *Obesity Surgery, 19*(12), 1716-1718.

Teoh, A. Y., Chiu, P. W., Yu Ngo, D. K., Wong, S. K., Lau, J. Y., & Ng, E. K. (2010). Outcomes of endoscopic submucosal dissection versus endoscopic mucosal resection in management of superficial squamous esophageal neoplasms outside japan. *Journal of Clinical Gastroenterology, 44*(9), e190-4.

Thakore, J. N., Mustafa, M., Suryaprasad, S., & Agrawal, S. (2003). Percutaneous endoscopic gastrostomy associated gastric metastasis. *Journal of Clinical Gastroenterology, 37*(4), 307-311.

Thompson, A. M., Rapson, T., Gilbert, F. J., & Park, K. G. (2004). Endoscopic palliative treatment for esophageal and gastric cancer: Techniques, complications, and survival in a population-based cohort of 948 patients. *Surgical Endoscopy, 18*(8), 1257-1262.

Thompson, C. C. (2010). Endoscopic therapy of obesity: A new paradigm in bariatric care. *Gastrointestinal Endoscopy, 72*(3), 505-507.

Thomson, A., & Baron, T. H. (2009). Esophageal stents: One size does not fit all. *Journal of Gastroenterology & Hepatology, 24*(1), 2-4.

Thomson, M., Fritscher-Ravens, A., Hall, S., Afzal, N., Ashwood, P., & Swain, C. P. (2004). Endoluminal gastroplication in children with significant gastro-oesophageal reflux disease. *Gut, 53*(12), 1745-1750.

Thuraisingam, A. I., Hughes, M. L., & Smart, H. L. (2004). Down-staging of an advanced esophageal carcinoma with chemoradiotherapy leading to stent migration necessitating colectomy. *Gastrointestinal Endoscopy, 59*(3), 457-460.

Tierney, B., Iqbal, A., Haider, M., & Filipi, C. (2007). Effects of prior endoluminal gastroplication on subsequent laparoscopic nissen fundoplication. *Surgical Endoscopy, 21*(2), 321-323.

Tokunaga, M., Hiki, N., Fukunaga, T., Miki, A., Ohyama, S., Seto, Y., & Yamaguchi, T. (2008). Does age matter in the indication for laparoscopy-assisted gastrectomy?. *Journal of Gastrointestinal Surgery, 12*(9), 1502-1507.

Toydemir, T., & Yerdel, M. A. (2011). Laparoscopic antireflux surgery after failed endoscopic treatments for gastroesophageal reflux disease. *Surgical Laparoscopy, Endoscopy & Percutaneous Techniques, 21*(1), 17-19.

Trevisani, L., & Gaudenzi, P. (2004). Medical image. erosion of a vascular prostheses by the duodenum. *New Zealand Medical Journal, 117*(1200), U1027.

Triadafilopoulos, G. (2003). Clinical experience with the stretta procedure. *Gastrointestinal Endoscopy Clinics of North America, 13*(1), 147-155.

Tringali, A., Daniel, F. B., Familiari, P., Perri, V., Mutignani, M., Vitelli, C. E., & Costamagna, G. (2010). Endoscopic treatment of a recalcitrant esophageal fistula with new tools: Stents, surgisis, and nitinol staples (with video). *Gastrointestinal Endoscopy, 72*(3), 647-650.

Tsuboi, K., Lee, T. H., Legner, A., Yano, F., Dworak, T., & Mittal, S. K. (2011). Identification of risk factors for postoperative dysphagia after primary anti-reflux surgery. *Surgical Endoscopy, 25*(3), 923-929.

Tsuji, Y., Ohata, K., Ito, T., Chiba, H., Ohya, T., Gunji, T., & Matsuhashi, N. (2010). Risk factors for bleeding after endoscopic submucosal dissection for gastric lesions. *World Journal of Gastroenterology, 16*(23), 2913-2917.

Tsunada, S., Ogata, S., Mannen, K., Arima, S., Sakata, Y., Shiraishi, R., . . . Fujimoto, K. (2008). Case series of endoscopic balloon dilation to treat a stricture caused by circumferential resection of the gastric antrum by endoscopic submucosal dissection. *Gastrointestinal Endoscopy, 67*(6), 979-983.

Tuebergen, D., Rijcken, E., & Senninger, N. (2004). Esophageal perforation as a complication of EndoCinch endoluminal gastroplication. *Endoscopy, 36*(7), 663-665.

Turial, S., Enders, J., Schier, F., & Santos, M. (2011). Comparison of a novel technique of the microlaparoscopic pyloromyotomy to circumbilical and weber-ramstedt approaches. *Journal of Gastrointestinal Surgery, 15*(7), 1136-1142.

Uba, A. F., Sowande, A. O., Amusa, Y. B., Ogundoyin, O. O., Chinda, J. Y., Adeyemo, A. O., & Adejuyigbe, O. (2002). Management of oesophageal foreign bodies in children. *East African Medical Journal, 79*(6), 334-338.

Uesato, M., Nabeya, Y., Akai, T., Inoue, M., Watanabe, Y., Kawahira, H., . . . Matsubara, H. (2010). Salivary amylase activity is useful for assessing perioperative stress in response to pain in patients undergoing endoscopic submucosal dissection of gastric tumors under deep sedation. *Gastric Cancer, 13*(2), 84-89.

Ulsenheimer, A., Schirra, J., Goke, B., & Storr, M. (2006). Enterothorax mimicking pleural effusion. *Indian Journal of Gastroenterology, 25*(3), 146.

Urabe, Y., Hiyama, T., Tanaka, S., Yoshihara, M., Arihiro, K., & Chayama, K. (2011). Advantages of endoscopic submucosal dissection versus endoscopic oblique aspiration mucosectomy for superficial esophageal tumors. *Journal of Gastroenterology & Hepatology, 26*(2), 275-280. doi:http://dx.doi.org/10.1111/j.1440-1746.2010.06503.x

van Berkel-Mijnsbergen, J. Y., Loosveld, O. J., & Vos, L. D. (2007). Abdominal pain with unexpected pulmonary consequences. diagnosis: Tension gastrothorax. *Netherlands Journal of Medicine, 65*(6), 218.

Van den Broek, W. T., Makay, O., Berends, F. J., Yuan, J. Z., Houdijk, A. P., Meijer, S., & Cuesta, M. A. (2004). Laparoscopically assisted transhiatal resection for malignancies of the distal esophagus. *Surgical Endoscopy, 18*(5), 812-817.

van der Bilt, J. D., Kramer, W. L., van der Zee, D. C., & Bax, N. M. (2004). Laparoscopic pyloromyotomy for hypertrophic pyloric stenosis: Impact of experience on the results in 182 cases. *Surgical Endoscopy, 18*(6), 907-909.

van der Merwe, W. G., Brown, R. A., Ireland, J. D., & Goddard, E. (2003). Percutaneous endoscopic gastrostomy in children--a 5-year experience. *South African Medical Journal.Suid-Afrikaanse Tydskrif Vir Geneeskunde, 93*(10), 781-785.

van der Zee, D. C. (2011). Thoracoscopic elongation of the esophagus in long-gap esophageal atresia. *Journal of Pediatric Gastroenterology & Nutrition, 52*(Suppl 1), S13-5.

van Hemel, B. M., Lamprou, A. A., Weersma, R., Plukker, J. T., Suurmeijer, A. J., & van Dullemen, H. M. (2010). Procedure-related, false-positive cytology results during EUS-guided FNA in patients with esophageal cancer. *Gastrointestinal Endoscopy, 71*(7), 1130-1133.

van Vilsteren, F. G., Pouw, R. E., Seewald, S., Alvarez Herrero, L., Sondermeijer, C. M., Visser, M., . . . Bergman, J. J. (2011). Stepwise radical endoscopic resection versus radiofrequency ablation for barrett's oesophagus with high-grade dysplasia or early cancer: A multicentre randomised trial. *Gut, 60*(6), 765-773.

van Zuuren, F. J., Grypdonck, M., Crevits, E., Vande Walle, C., & Defloor, T. (2006). The effect of an information brochure on patients undergoing gastrointestinal endoscopy: A randomized controlled study. *Patient Education & Counseling, 64*(1-3), 173-182.

Veeramootoo, D., Parameswaran, R., Krishnadas, R., Froeschle, P., Cooper, M., Berrisford, R. G., & Wajed, S. A. (2009). Classification and early recognition of gastric conduit failure after minimally invasive esophagectomy. *Surgical Endoscopy, 23*(9), 2110-2116.

Veeramootoo, D., Shore, A. C., Shields, B., Krishnadas, R., Cooper, M., Berrisford, R. G., & Wajed, S. A. (2010). Ischemic conditioning shows a time-dependant influence on the fate of the gastric conduit after minimally invasive esophagectomy. *Surgical Endoscopy, 24*(5), 1126-1131.

Veeramootoo, D., Taylor, C., & Wajed, S. A. (2011). Minimally invasive esophagectomy with two-field lymphadenectomy. *Surgical Endoscopy, 25*(9), 3110-3115.

Vegunta, R. K., Woodland, J. H., Rawlings, A. L., Wallace, L. J., & Pearl, R. H. (2008). Practice makes perfect: Progressive improvement of laparoscopic pyloromyotomy results, with experience. *Journal of Laparoendoscopic & Advanced Surgical Techniques.Part A, 18*(1), 152-156.

Velanovich, V., & Mohlberg, N. (2006). The split-stomach fundoplication after esophagogastrectomy. *Journal of Gastrointestinal Surgery, 10*(2), 178-183.

Vere, C. C., Cazacu, S., Comanescu, V., Mogoanta, L., Rogoveanu, I., & Ciurea, T. (2005). Endoscopical and histological features in bile reflux gastritis. *Romanian Journal of Morphology & Embryology, 46*(4), 269-274.

Verna, E. C., & Larghi, A. (2009). Endoscopic submucosal dissection: Learning from the japanese experience. *Digestive & Liver Disease, 41*(3), 210-211.

Verschuur, E. M., Steyerberg, E. W., Kuipers, E. J., & Siersema, P. D. (2007). Effect of stent size on complications and recurrent dysphagia in patients with esophageal or gastric cardia cancer. *Gastrointestinal Endoscopy, 65*(4), 592-601.

von Rahden, B. H., & Stein, H. J. (2008). Endoscopic mucosal resection as curative therapy for esophageal cancer is inappropriate and should be discouraged. *Endoscopy, 40*(2), 169.

von Renteln, D., Riecken, B., Walz, B., Muehleisen, H., & Caca, K. (2008). Endoscopic GIST resection using FlushKnife ESD and subsequent perforation closure by means of endoscopic full-thickness suturing. *Endoscopy, 40*(Suppl 2), E224-5.

von Renteln, D., Schiefke, I., Fuchs, K. H., Raczynski, S., Philipper, M., Breithaupt, W., . . . Neuhaus, H. (2009). Endoscopic full-thickness plication for the treatment of gastroesophageal reflux disease using multiple plicator implants: 12-month multicenter study results. *Surgical Endoscopy, 23*(8), 1866-1875.

Vrolijk, J. M., Van Noord, D., Verhagen, H. J., Pattynama, P. M., & Mensink, P. B. (2010). A giant antral ulceration evoked by a rare cause of single-vessel chronic GI ischemia. *Gastrointestinal Endoscopy, 72*(1), 211-213.

Wacke, W., Hecker, U., Woenckhaus, C., & Lerch, M. M. (2004). Percutaneous endoscopic gastrostomy site metastasis in a patient with esophageal cancer. *Endoscopy, 36*(5), 472.

Wakefield, C., & Paterson-Brown, S. (2002). Diagnosis and treatment of oesophageal cancer. *Practitioner, 246*(1638), 586-588.

Wang, L., Fan, C. Q., Ren, W., Zhang, X., Li, Y. H., & Zhao, X. Y. (2011). Endoscopic dissection of large endogenous myogenic tumors in the esophagus and stomach is safe and feasible: A report of 42 cases. *Scandinavian Journal of Gastroenterology, 46*(5), 627-633.

Wang, L., Ren, W., Fan, C. Q., Li, Y. H., Zhang, X., Yu, J., . . . Zhao, X. Y. (2011). Full-thickness endoscopic resection of nonintracavitary gastric stromal tumors: A novel approach. *Surgical Endoscopy, 25*(2), 641-647.

Wang, Y. D., Ye, H., Ye, Z. Y., Zhu, Y. W., Xie, Z. J., Zhu, J. H., . . . Zhao, T. (2008). Laparoscopic splenectomy and azygoportal disconnection for bleeding varices with hypersplenism. *Journal of Laparoendoscopic & Advanced Surgical Techniques.Part A, 18*(1), 37-41.

Wang, Y. R., Dempsey, D. T., Friedenberg, F. K., & Richter, J. E. (2008). Trends of heller myotomy hospitalizations for achalasia in the united states, 1993-2005: Effect of surgery volume on perioperative outcomes. *American Journal of Gastroenterology, 103*(10), 2454-2464.

Watanabe, Y., Kato, N., Maehata, T., Okamoto, M., Tsuda, T., Hattori, S., . . . Itoh, F. (2006). Safer endoscopic gastric mucosal resection: Preoperative proton pump inhibitor administration. *Journal of Gastroenterology & Hepatology, 21*(11), 1675-1680.

Wedemeyer, J., Schneider, A., Manns, M. P., & Jackobs, S. (2008). Endoscopic vacuum-assisted closure of upper intestinal anastomotic leaks. *Gastrointestinal Endoscopy, 67*(4), 708-711.

Weigt, J., Zimmermann, L. C., Monkemuller, K., & Malfertheiner, P. (2007). Acute pancreatitis after argon plasma coagulation of duodenal polyps in a patient with familial adenomatous polyposis. *Endoscopy, 39*(Suppl 1), E278.

Wells, C. D., Harrison, M. E., Gurudu, S. R., Crowell, M. D., Byrne, T. J., Depetris, G., & Sharma, V. K. (2008). Treatment of gastric antral vascular ectasia (watermelon stomach) with endoscopic band ligation. *Gastrointestinal Endoscopy, 68*(2), 231-236.

Wenger, U., Luo, J., Lundell, L., & Lagergren, J. (2005). A nationwide study of the use of self-expanding stents in patients with esophageal cancer in sweden. *Endoscopy, 37*(4), 329-334.

White, N. B., Gibbs, K. E., Goodwin, A., & Teixeira, J. (2003). Gastric bezoar complicating laparoscopic adjustable gastric banding, and review of literature. *Obesity Surgery, 13*(6), 948-950.

Wilkinson, M., Nagula, S., & Buscaglia, J. M. (2010). Spiral enteroscopy-assisted pancreatoscopy for the diagnosis of obscure overt bleeding in a patient with surgically altered anatomy. *Gastrointestinal Endoscopy, 72*(3), 653-655.

Will, U., Seidel, T., & Bosseckert, H. (2002). Endoscopic hemoclip treatment for bleeding artificially induced mallory-weiss tears. *Endoscopy, 34*(9), 748.

Woodward, B. G. (2003). Bariatric surgery options. *Critical Care Nursing Quarterly, 26*(2), 89-100.

Wu, C. J., Hsu, P. I., Lo, G. H., Shie, C. B., Lo, C. C., Wang, E. M., . . . Lai, K. H. (2005). Clinical application of clip-assisted endoscopic method for nasoenteric feeding in patients with gastroparesis and gastroesophageal wounds. *World Journal of Gastroenterology, 11*(24), 3714-3718.

Wu, J. M., Yang, C. Y., Wang, M. Y., Wu, M. H., & Lin, M. T. (2010). Gasless laparoscopy-assisted versus open resection for gastrointestinal stromal tumors of the upper stomach: Preliminary results. *Journal of Laparoendoscopic & Advanced Surgical Techniques.Part A, 20*(9), 725-729.

Yagmurlu, A., Barnhart, D. C., Vernon, A., Georgeson, K. E., & Harmon, C. M. (2004). Comparison of the incidence of complications in open and laparoscopic pyloromyotomy: A concurrent single institution series. *Journal of Pediatric Surgery, 39*(3), 292-296.

Yamada, H., Kojima, K., Inokuchi, M., Kawano, T., & Sugihara, K. (2011). Efficacy of celiac branch preservation in roux-en-y reconstruction after laparoscopy-assisted distal gastrectomy. *Surgery, 149*(1), 22-28.

Yamaguchi, T., Ichikawa, D., Kurioka, H., Ikoma, H., Koike, H., Otsuji, E., . . . Yamagishi, H. (2004). Postoperative clinical evaluation following pylorus-preserving gastrectomy. *Hepato-Gastroenterology, 51*(57), 883-886.

Yamaguchi, Y., Katsumi, N., Tauchi, M., Toki, M., Nakamura, K., Aoki, K., . . . Takahashi, S. (2005). A prospective randomized trial of either famotidine or omeprazole for the prevention of bleeding after endoscopic mucosal resection and the healing of endoscopic mucosal resection-induced ulceration. *Alimentary Pharmacology & Therapeutics, 21*(Suppl 2), 111-115.

Yamaguchi, Y., Katusmi, N., Aoki, K., Toki, M., Nakamura, K., Abe, N., . . . Takahashi, S. (2007). Resection area of 15 mm as dividing line for choosing strip biopsy or endoscopic submucosal dissection for mucosal gastric neoplasm. *Journal of Clinical Gastroenterology, 41*(5), 472-476.

Yamamoto, T., Kuyama, Y., Kozuma, K., & Isshiki, T. (2008). Low-dose aspirin prolongs bleeding after gastric biopsy in japanese patients. *Thrombosis Research, 122*(5), 722-723.

Yano, F., El Sherif, A., Filipi, C. J., & Mittal, S. K. (2008). Use of temporary esophageal stent in management of perforations after benign esophageal surgery. *Surgical Laparoscopy, Endoscopy & Percutaneous Techniques, 18*(3), 283-285.

Yano, F., Stadlhuber, R. J., Tsuboi, K., Garg, N., Filipi, C. J., & Mittal, S. K. (2009). Preoperative predictability of the short esophagus: Endoscopic criteria. *Surgical Endoscopy, 23*(6), 1308-1312.

Yano, F., Stadlhuber, R. J., Tsuboi, K., Gerhardt, J., Filipi, C. J., & Mittal, S. K. (2009). Outcomes of surgical treatment of intrathoracic stomach. *Diseases of the Esophagus, 22*(3), 284-288.

Yano, H., Kinuta, M., Nakano, Y., Tono, T., Matsui, S., Iwazawa, T., . . . Monden, T. (2002). Laparoscopic wedge resection for gastric perforation after endoscopic mucosal resection: Report of a case. *Surgery Today, 32*(9), 821-823.

Ye, B. D., Cheon, J. H., Choi, K. D., Kim, S. G., Kim, J. S., Jung, H. C., & Song, I. S. (2006). Omeprazole may be superior to famotidine in the management of iatrogenic ulcer after endoscopic mucosal resection: A prospective randomized controlled trial. *Alimentary Pharmacology & Therapeutics, 24*(5), 837-843.

Yen, H. H., & Chen, Y. Y. (2009). Duodenal intramural hematoma and delayed perforation: Rare but fatal complication of endoscopic therapy for a bleeding duodenal ulcer. *Endoscopy, 41*(Suppl 2), E119.

Yen, H. H., Soon, M. S., & Chen, Y. Y. (2005). Esophageal intramural hematoma: An unusual complication of endoscopic biopsy. *Gastrointestinal Endoscopy, 62*(1), 161-163.

Yetkin, G., Oba, S., Uludag, M., Paksoy, I., Akgun, I., & Eren, N. (2007). Effects of sedation during upper gastrointestinal endoscopy on endocrine response and cardiorespiratory function. *Brazilian Journal of Medical & Biological Research, 40*(12), 1647-1652.

Youssef, Y., Richards, W. O., Sharp, K., Holzman, M., Sekhar, N., Kaiser, J., & Torquati, A. (2007). Relief of dysphagia after laparoscopic heller myotomy improves long-term quality of life. *Journal of Gastrointestinal Surgery, 11*(3), 309-313.

Yu, C. C., Lee, W. L., Ho, W. M., Wu, C. C., Liu, T. J., & P'eng, F. K. (2007). Successful management of latrogenic aortoduodenal fistula by intraaortic endovascular stent-graft and duodenal diversion. *Hepato-Gastroenterology, 54*(74), 431-433.

Yumiba, T., Ito, T., Ikushima, H., Taniguchi, E., Inoue, Y., Nishida, T., . . . Matsuda, H. (2003). Effect of mucosal suture on the healing of mucosal defect in laparoscopic intragastric surgery. *Gastric Cancer, 6*(2), 96-99.

Zanati, S. A., Ganc, R. L., & Kortan, P. (2004). Endoscopic modification of a billroth II gastrojejunostomy by using metallic clips. *Gastrointestinal Endoscopy, 60*(3), 485-488.

Zehetner, J., DeMeester, S. R., Hagen, J. A., Ayazi, S., Augustin, F., Lipham, J. C., & DeMeester, T. R. (2011). Endoscopic resection and ablation versus esophagectomy for high-grade dysplasia and intramucosal adenocarcinoma. *Journal of Thoracic & Cardiovascular Surgery, 141*(1), 39-47.

Zeldin, G. A., & Kochman, M. L. (2002). Ligature closure of the esophagus. *Gastrointestinal Endoscopy, 56*(4), 562-563.

Zheng, X., Yao, Y., & Liu, Q. (2011). Gastric perforation after laparoscopic splenectomy and esophagogastric devascularization for portal hypertension: Report of a case. *Surgical Laparoscopy, Endoscopy & Percutaneous Techniques, 21*(4), e209-12.

Zhou, M. Q., Li, N. P., & Lu, R. D. (2002). Duodenoscopy in treatment of acute gallstone pancreatitis. *Hepatobiliary & Pancreatic Diseases International, 1*(4), 608-610.

Zopf, Y., Konturek, P., Nuernberger, A., Maiss, J., Zenk, J., Iro, H., . . . Schwab, D. (2008). Local infection after placement of percutaneous endoscopic gastrostomy tubes: A prospective study evaluating risk factors. *Canadian Journal of Gastroenterology, 22*(12), 987-991.

Zornig, C., Strate, U., Fibbe, C., Emmermann, A., & Layer, P. (2002). Nissen vs toupet laparoscopic fundoplication. *Surgical Endoscopy, 16*(5), 758-766.

Studies Related to Cost and Cost-effectiveness

Study design not relevant

Barkun, A. N. (2010). Emergency endoscopy cover: Cost and benefits?. *Gut, 59*(8), 1012-1014.

Csendes, A. (2011). Re: A time-saving technique for specimen extraction in sleeve gastrectomy. *World Journal of Surgery, 35*(4), 924.

Eisen, G. M., Lieberman, D., Fennerty, M. B., & Sonnenberg, A. (2004). Screening and surveillance in barrett's esophagus: A call to action. *Clinical Gastroenterology & Hepatology, 2*(10), 861-864.

El-Serag, H. B., & Naik, A. D. (2009). Surveillance in barrett's esophagus: Lessons from behavioral economics. *Gastroenterology, 137*(3), 763-765.

Enns, R. (2004). Less acid + less bleeding = better outcomes and more money!. *Canadian Journal of Gastroenterology, 18*(12), 747-748.

Eskaros, S., Ghevariya, V., Krishnaiah, M., Asarian, A., & Anand, S. (2009). Percutaneous endoscopic suturing: An effective treatment for gastrocutaneous fistula. *Gastrointestinal Endoscopy, 70*(4), 768-771.

Fernando, N., Weerasekera, D., Meedin, F., & Bogahawatta, A. (2003). A pilot study of a low cost CLO test. *Ceylon Medical Journal, 48*(3), 98-99.

Heymann, T. (2011). Cost benefit of out of hours endoscopy: The options. *Gut, 60*(2), 282.

Kawano, S., Okada, H., Kawahara, Y., Hori, K., Tanioka, D., Tsuzuki, T., . . . Yamamoto, K. (2011). Proton pump inhibitor dose-related healing rate of artificial ulcers after endoscopic submucosal dissection: A prospective randomized controlled trial. *Digestion, 84*(1), 46-53.

Knox, M. A. (2011). Should we screen patients for barrett's esophagus? no: The case against screening. *American Family Physician, 83*(10), 1148.

Moayyedi, P. (2004). Should patients with GERD be screened once at least for barrett's epithelium? con: Patients with GERD should be screened once at least for barrett's esophagus--medicine or magic?. *American Journal of Gastroenterology, 99*(12), 2293-2295.

O'Connor, J. J. (2006). Screening endoscopy: Cost-effective?. *Journal of the American College of Surgeons, 203*(6), 973.

Perdue, D. G., Murray, J., & Wang, K. K. (2004). The wizards of odds: Cost-effectiveness, barrett's screening, and surveillance guidelines. *Clinical Gastroenterology & Hepatology, 2*(10), 865-867.

Rugge, M., Cassaro, M., Pennelli, G., Russo, V. M., Di Mario, F., & Farinati, F. (2003). Pathology and cost effectiveness of endoscopy surveillance for premalignant gastric lesions. *Gut, 52*(3), 453-454.

Spechler, S. J. (2004). Should patients with GERD be screened once at least for barrett's epithelium? A balancing view: To screen or not to screen: Scoping out the issues. *American Journal of Gastroenterology, 99*(12), 2295-2296.

Strayer, S. M. (2011). Should we screen patients for barrett's esophagus? yes: Men with long-standing reflux symptoms should be screened with endoscopy. *American Family Physician, 83*(10), 1140.

Vakil, N. (2006). Pretreatment endoscopy--pro & contra: Is endoscopy needed before treatment in all patients with gastroesophageal reflux disease?. *Endoscopy, 38*(3), 276-278.

Population not relevant

Aldulaimi, D. M., Cox, M., Nwokolo, C. U., & Loft, D. E. (2005). Barrett's surveillance is worthwhile and detects curable cancers. A prospective cohort study addressing cancer incidence, treatment outcome and survival. *European Journal of Gastroenterology & Hepatology, 17*(9), 943-950.

Ananthakrishnan, A. N., McGinley, E. L., & Saeian, K. (2009). Higher hospital volume is associated with lower mortality in acute nonvariceal upper-GI hemorrhage. *Gastrointestinal Endoscopy, 70*(3), 422-432.

Atreja, A., Fu, A. Z., Sanaka, M. R., & Vargo, J. J. (2010). Non-invasive testing for helicobacter pylori in patients hospitalized with peptic ulcer hemorrhage: A cost-effectiveness analysis. *Digestive Diseases & Sciences, 55*(5), 1356-1363.

Barbiere, J. M., & Lyratzopoulos, G. (2009). Cost-effectiveness of endoscopic screening followed by surveillance for barrett's esophagus: A review. *Gastroenterology, 137*(6), 1869-1876.

Dahshan, A. H., & Kevin Donovan, G. (2007). Bougienage versus endoscopy for esophageal coin removal in children. *Journal of Clinical Gastroenterology, 41*(5), 454-456.

Dan, Y. Y., So, J. B., & Yeoh, K. G. (2006). Endoscopic screening for gastric cancer. *Clinical Gastroenterology & Hepatology, 4*(6), 709-716.

Das, A., Wells, C., Kim, H. J., Fleischer, D. E., Crowell, M. D., & Sharma, V. K. (2009). An economic analysis of endoscopic ablative therapy for management of nondysplastic barrett's esophagus. *Endoscopy, 41*(5), 400-408.

Framp, A. (2010). Working toward an understanding of the impact of hereditary cancers. *Gastroenterology Nursing, 33*(6), 400-405.

Gerson, L., & Lin, O. S. (2007). Cost-benefit analysis of capsule endoscopy compared with standard upper endoscopy for the detection of barrett's esophagus. *Clinical Gastroenterology & Hepatology, 5*(3), 319-325.

Gerson, L. B., Groeneveld, P. W., & Triadafilopoulos, G. (2004). Cost-effectiveness model of endoscopic screening and surveillance in patients with gastroesophageal reflux disease. *Clinical Gastroenterology & Hepatology, 2*(10), 868-879.

Gul, N., & Quadri, M. (2011). The clinical diagnostic reasoning process determining the use of endoscopy in diagnosing peptic ulcer disease. *Jcpsp, Journal of the College of Physicians & Surgeons - Pakistan, 21*(9), 548-552.

Gupta, N., Bansal, A., Wani, S. B., Gaddam, S., Rastogi, A., & Sharma, P. (2011). Endoscopy for upper GI cancer screening in the general population: A cost-utility analysis. *Gastrointestinal Endoscopy, 74*(3), 610-624.e2.

Hirst, N. G., Gordon, L. G., Whiteman, D. C., Watson, D. I., & Barendregt, J. J. (2011). Is endoscopic surveillance for non-dysplastic barrett's esophagus cost-effective? review of economic evaluations. *Journal of Gastroenterology & Hepatology, 26*(2), 247-254. doi:http://dx.doi.org/10.1111/j.1440-1746.2010.06506.x

Hur, C., Nishioka, N. S., & Gazelle, G. S. (2003). Cost-effectiveness of photodynamic therapy for treatment of barrett's esophagus with high grade dysplasia. *Digestive Diseases & Sciences, 48*(7), 1273-1283.

Hur, C., Nishioka, N. S., & Gazelle, G. S. (2004). Cost-effectiveness of aspirin chemoprevention for barrett's esophagus. *Journal of the National Cancer Institute, 96*(4), 316-325.

Imaeda, H., Hosoe, N., Suzuki, H., Saito, Y., Ida, Y., Nakamura, R., . . . Hibi, T. (2011). Effect of lansoprazole versus roxatidine on prevention of bleeding and promotion of ulcer healing after endoscopic submucosal dissection for superficial gastric neoplasia. *Journal of Gastroenterology, 46*(11), 1267-1272.

Katona, B. W., & Falk, G. W. (2011). Barrett's esophagus surveillance: When, how often, does it work? *Gastrointestinal Endoscopy Clinics of North America, 21*(1), 9-24.

Lake, J. M., & Wong, R. K. (2006). Review article: The management of achalasia - a comparison of different treatment modalities. *Alimentary Pharmacology & Therapeutics, 24*(6), 909-918.

Lee, K. K., You, J. H., Wong, I. C., Kwong, S. K., Lau, J. Y., Chan, T. Y., . . . Chung, S. S. (2003). Cost-effectiveness analysis of high-dose omeprazole infusion as adjuvant therapy to endoscopic treatment of bleeding peptic ulcer. *Gastrointestinal Endoscopy, 57*(2), 160-164.

Lee, W. C., Yeh, Y. C., Lacy, B. E., Pandolfino, J. E., Brill, J. V., Weinstein, M. L., . . . Pashos, C. L. (2008). Timely confirmation of gastro-esophageal reflux disease via pH monitoring: Estimating budget impact on managed care organizations. *Current Medical Research & Opinion, 24*(5), 1317-1327.

Miller, S. M., Goldstein, J. L., & Gerson, L. B. (2011). Cost-effectiveness model of endoscopic biopsy for eosinophilic esophagitis in patients with refractory GERD. *American Journal of Gastroenterology, 106*(8), 1439-1445. doi:http://dx.doi.org/10.1038/ajg.2011.94

Nietert, P. J., Silverstein, M. D., Mokhashi, M. S., Kim, C. Y., Glenn, T. F., Marsi, V. A., . . . Wallace, M. B. (2003). Cost-effectiveness of screening a population with chronic gastroesophageal reflux. *Gastrointestinal Endoscopy, 57*(3), 311-318.

Pohl, H., Sonnenberg, A., Strobel, S., Eckardt, A., & Rosch, T. (2009). Endoscopic versus surgical therapy for early cancer in barrett's esophagus: A decision analysis. *Gastrointestinal Endoscopy, 70*(4), 623-631.

Ragunath, K., Krasner, N., Raman, V. S., Haqqani, M. T., Phillips, C. J., & Cheung, I. (2005). Endoscopic ablation of dysplastic barrett's oesophagus comparing argon plasma coagulation and photodynamic therapy: A randomized prospective trial assessing efficacy and cost-effectiveness. *Scandinavian Journal of Gastroenterology, 40*(7), 750-758.

Regula, J. (2009). Screening and surveillance of barrett's esophagus. *Digestive Diseases, 27*(1), 54-57.

Rubenstein, J. H., Inadomi, J. M., Brill, J. V., & Eisen, G. M. (2007). Cost utility of screening for barrett's esophagus with esophageal capsule endoscopy versus conventional upper endoscopy. *Clinical Gastroenterology & Hepatology, 5*(3), 312-318.

Sanchez, A., Reza, M., Blasco, J. A., & Callejo, D. (2010). Effectiveness, safety, and cost-effectiveness of photodynamic therapy in barrett's esophagus: A systematic review. *Diseases of the Esophagus, 23*(8), 633-640. doi:http://dx.doi.org/10.1111/j.1442-2050.2010.01078.x

Schuchert, M. J., McGrath, K., & Buenaventura, P. O. (2005). Barrett's esophagus: Diagnostic approaches and surveillance. *Seminars in Thoracic & Cardiovascular Surgery, 17*(4), 301-312.

Shaheen, N. J., & Frantz, D. J. (2010). When to consider endoscopic ablation therapy for barrett's esophagus. *Current Opinion in Gastroenterology, 26*(4), 361-366.

Shaheen, N. J., Inadomi, J. M., Overholt, B. F., & Sharma, P. (2004). What is the best management strategy for high grade dysplasia in barrett's oesophagus? A cost effectiveness analysis. *Gut, 53*(12), 1736-1744.

Shaheen, N. J., & Palmer, L. B. (2009). Improving screening practices for barrett's esophagus. *Surgical Oncology Clinics of North America, 18*(3), 423-437.

Shami, V. M., & Waxman, I. (2002). Endoscopic ultrasound-guided fine needle aspiration in esophageal cancer. *Minerva Chirurgica, 57*(6), 811-818.

Sharaf, R. N., Weinshel, E. H., Bini, E. J., Rosenberg, J., Sherman, A., & Ren, C. J. (2004). Endoscopy plays an important preoperative role in bariatric surgery. *Obesity Surgery, 14*(10), 1367-1372.

Sharma, P., & Sidorenko, E. I. (2005). Are screening and surveillance for barrett's oesophagus really worthwhile? *Gut, 54*(Suppl 1), 27-32.

Shrime, M. G., Johnson, P. E., & Stewart, M. G. (2007). Cost-effective diagnosis of ingested foreign bodies. *Laryngoscope, 117*(5), 785-793.

Smith, S. R., Genden, E. M., & Urken, M. L. (2002). Endoscopic stapling technique for the treatment of zenker diverticulum vs standard open-neck technique: A direct comparison and charge analysis. *Archives of Otolaryngology -- Head & Neck Surgery, 128*(2), 141-144.

Vakil, N., Ryden-Bergsten, T., & Bergenheim, K. (2002). Patient-centred endpoints in economic evaluations of gastro-oesophageal reflux disease. *Alimentary Pharmacology & Therapeutics, 16*(8), 1469-1480.

Wani, S., & Sharma, P. (2006). The rationale for screening and surveillance of barrett's metaplasia. *Best Practice & Research in Clinical Gastroenterology, 20*(5), 829-842.

Wildi, S. M., Wallace, M. B., Glenn, T. F., Mokhashi, M. S., Kim, C. Y., & Hawes, R. H. (2003). Accuracy of esophagoscopy performed by a non-physician endoscopist with a 4-mm diameter battery-powered endoscope. *Gastrointestinal Endoscopy, 57*(3), 305-310.

Zhou, M. Q., Li, N. P., & Lu, R. D. (2002). Duodenoscopy in treatment of acute gallstone pancreatitis. *Hepatobiliary & Pancreatic Diseases International, 1*(4), 608-610.

Intervention not relevant

Abbas, Z., Rizvi, L., Ahmed, U. S., Mumtaz, K., & Jafri, W. (2008). Cost saving by reloading the multiband ligator in endoscopic esophageal variceal ligation: A proposal for developing countries. *World Journal of Gastroenterology, 14*(14), 2222-2225.

Akbari, H., Kosugi, Y., & Kihara, K. (2008). A novel method for artery detection in laparoscopic surgery. *Surgical Endoscopy, 22*(7), 1672-1677.

Al-Sabah, S., Barkun, A. N., Herba, K., Adam, V., Fallone, C., Mayrand, S., . . . Bardou, M. (2008). Cost-effectiveness of proton-pump inhibition before endoscopy in upper gastrointestinal bleeding. *Clinical Gastroenterology & Hepatology, 6*(4), 418-425.

Anis, M. K., Abid, S., Jafri, W., Abbas, Z., Shah, H. A., Hamid, S., & Wasaya, R. (2006). Acceptability and outcomes of the percutaneous endoscopic gastrostomy (PEG) tube placement--patients' and care givers' perspectives. *BMC Gastroenterology, 6*, 37.

Anonymous. (2008). Surgery for obesity in adults. *Drug & Therapeutics Bulletin*, *46*(6), 41-5.

Chan, D., Harris, S., Roderick, P., Brown, D., & Patel, P. (2009). A randomised controlled trial of structured nurse-led outpatient clinic follow-up for dyspeptic patients after direct access gastroscopy. *BMC Gastroenterology, 9*, 12.

de Aguilar-Nascimento, J. E., & Kudsk, K. A. (2007). Clinical costs of feeding tube placement. *Jpen: Journal of Parenteral & Enteral Nutrition, 31*(4), 269-273.

Imperiale, T. F., Chalasani, N., & Klein, R. W. (2003). Measuring the hemodynamic response to primary pharmacoprophylaxis of variceal bleeding: A cost-effectiveness analysis. *American Journal of Gastroenterology, 98*(12), 2742-2750.

Jeurnink, S. M., Polinder, S., Steyerberg, E. W., Kuipers, E. J., & Siersema, P. D. (2010). Cost comparison of gastrojejunostomy versus duodenal stent placement for malignant gastric outlet obstruction. *Journal of Gastroenterology, 45*(5), 537-543.

Johnsson, E., Thune, A., & Liedman, B. (2004). Palliation of malignant gastroduodenal obstruction with open surgical bypass or endoscopic stenting: Clinical outcome and health economic evaluation. *World Journal of Surgery, 28*(8), 812-817.

Karanicolas, P. J., Smith, S. E., Inculet, R. I., Malthaner, R. A., Reynolds, R. P., Goeree, R., & Gafni, A. (2007). The cost of laparoscopic myotomy versus pneumatic dilatation for esophageal achalasia. *Surgical Endoscopy, 21*(7), 1198-1206.

Kostic, S., Johnsson, E., Kjellin, A., Ruth, M., Lonroth, H., Andersson, M., & Lundell, L. (2007). Health economic evaluation of therapeutic strategies in patients with idiopathic achalasia: Results of a randomized trial comparing pneumatic dilatation with laparoscopic cardiomyotomy. *Surgical Endoscopy, 21*(7), 1184-1189.

Koumi, A., Filippidis, T., Leontara, V., Makri, L., & Panos, M. Z. (2011). Detection of helicobacter pylori: A faster urease test can save resources. *World Journal of Gastroenterology, 17*(3), 349-353.

Laasch, H. U., Wilbraham, L., Bullen, K., Marriott, A., Lawrance, J. A., Johnson, R. J., . . . Martin, D. F. (2003). Gastrostomy insertion: Comparing the options--PEG, RIG or PIG?. *Clinical Radiology, 58*(5), 398-405.

Livingston, E. H. (2005). Hospital costs associated with bariatric procedures in the united states. *American Journal of Surgery, 190*(5), 816-820.

Makris, N., Crott, R., Fallone, C. A., Bardou, M., & Barkun, A. (2003). Cost-effectiveness of routine endoscopic biopsies for helicobacter pylori detection in patients with non-ulcer dyspepsia. *Gastrointestinal Endoscopy, 58*(1), 14-22.

Martin, R. A. (2004). Utility of proton pump inhibitors in the treatment of gastrointestinal hemorrhage. *Connecticut Medicine, 68*(7), 435-438.

McPartlin, D. W., Nouraei, S. A., Tatla, T., Howard, D. J., & Sandhu, G. S. (2005). How we do it: Transnasal fibreoptic oesophagoscopy. *Clinical Otolaryngology, 30*(6), 547-550.

Orban, N. T., Ogawa, T., Atun, R., & Corbridge, R. (2009). Trans-nasal oesphagoscopy: Cost implications for a change in practice: How we do it. *Clinical Otolaryngology, 34*(4), 380-385.

Schiefke, I., Rogalski, C., Zabel-Langhennig, A., Witzigmann, H., Mossner, J., Hasenclever, D., & Caca, K. (2005). Are endoscopic antireflux therapies cost-effective compared with laparoscopic fundoplication?. *Endoscopy, 37*(3), 217-222.

Schwenkglenks, M., Marbet, U. A., & Szucs, T. D. (2004). Epidemiology and costs of gastroesophageal reflux disease in switzerland: A population-based study. *Sozial- Und Praventivmedizin, 49*(1), 51-61.

Sihvo, E. I., Pentikainen, T., Luostarinen, M. E., Ramo, O. J., & Salo, J. A. (2002). Inoperable adenocarcinoma of the oesophagogastric junction: A comparative clinical study of laser coagulation versus self-expanding metallic stents with special reference to cost analysis. *European Journal of Surgical Oncology, 28*(7), 711-715.

Sorbi, D., & Chak, A. (2003). Unsedated EGD. *Gastrointestinal Endoscopy, 58*(1), 102-110.

Sreedharan, A., Clough, M., Hemingbrough, E., Gatta, L., Chalmers, D. M., Axon, A. T., & Moayyedi, P. (2004). Cost-effectiveness and long-term impact of helicobacter pylori 'test and treat' service in reducing open access endoscopy referrals. *European Journal of Gastroenterology & Hepatology, 16*(10), 981-986.

Tursi, A., & Brandimarte, G. (2002). Endoscopic polypectomy of large pedunculated gastric polyps using a new, safe, and effective technique. *Endoscopy, 34*(8), 673-674.

Yakoob, J., Abid, S., Jafri, W., Abbas, Z., Islam, M., & Ahmad, Z. (2006). Comparison of biopsy-based methods for the detection of helicobacter pylori infection. *British Journal of Biomedical Science, 63*(4), 159-162.

Comparator not relevant

Vakil, N., Zullo, A., Ricci, C., Hassan, C., & Vaira, D. (2008). Duplicate breath testing to confirm eradication of helicobacter pylori: Incremental benefit and cost in 419 patients. *Alimentary Pharmacology & Therapeutics, 28*(11-12), 1304-1308.

Outcomes not relevant

Lujber, L., Gerlinger, I., Fabian, G., Szanyi, I., Telegdy, I., & Pytel, J. (2008). A novel and inexpensive model for practicing upper gastrointestinal endoscopy and percutaneous endoscopic gastrostomy techniques. *Endoscopy, 40*(Suppl 2), E73.

Yeh, J. M., Ho, W., & Hur, C. (2010). Cost-effectiveness of endoscopic surveillance of gastric ulcers to improve survival. *Gastrointestinal Endoscopy, 72*(1), 33-43.

Appendix C. Summary of Findings Table for Systematic Reviews and Technology Assessments

Reference	Study Design	Patient Characteristics	Type of Relationship Follow-up	Factors Assessed Main Findings	Quality Comments
Delaney	Meta-analysis of 1) Initial endoscopy vs acid suppression (6 studies) and 2) *H. pylori* test and treat vs endoscopy (5 studies)	Adults presenting to primary care or endoscopy unit with uninvestigated dyspeptic symptoms	1) Effectiveness of early investigation vs empiric medication fo symptom score improvement 2) Effectiveness of *H. pylori* test and treat vs endoscopy for symptom score improvement	1) RR 0.89 (95% CI 0.77 to 1.02, p = 0.70) 2) RR 0.95 (95% CI 0.79 to 1.15) *trial-level meta-analysis*	Good Excluded patients with reflux as predominant symptom.
Ford	Individual patient data meta-analysis of *H. pylori* test and treat vs early endoscopy (5 studies)	Adults presenting to primary care or endoscopy unit with uninvestigated dyspeptic symptoms	2) Effectiveness of *H. pylori* test and treat vs early endoscopy on risk of symptoms at 12 months	RR 0.95 (95% CI 0.92-0,99) favoring endoscopy	Good Unblinded trials
Vakil 2006¥	Meta-analysis (retrospective studies and case-control studies with healthy	n=57,363 (17 studies) Inclusion: Prospective data collection, >16 yrs of age, no specific patient selection, dyspepsia/alarm symptoms	Diagnostic performance of alarm features, computer models, clinical opinion, anemia, weight loss for prediction of	POOLED ESTIMATES *≥1 alarm feature (n= 46,161;7 studies)* Sensitivity (0% sensitivity studies excluded): 67% (95% CI: 54%, 83%) with heterogeneity ($Q=7.6_4$, P=11) Specificity (0% sensitivity studies excluded): 66% (95% CI: 55%, 79%) with highly significant	Good Financial interests were not disclosed

Reference	Study Design	Patient Characteristics	Type of Relationship Follow-up	Factors Assessed Main Findings	Quality Comments
	controls were excluded)	recorded, record of endoscopic diagnosis, symptoms and endoscopic diagnosis compared, >100 patients evaluated, >1 upper GI cancer diagnosed Exclusion: Not always reported in studies, however GI bleeding and GI surgery were common exclusion factors	malignancy Follow-up N/A	heterogeneity ($Q=1779_4$, $P<0.001$) LR+: 2.74 (95% CI: 1.47, 5.24) *Clinical Opinion (n=3159; 3 studies)* Sensitivity: 29% (95% CI: 10%, 88%) Specificity: 97% (95% CI: 96%, 99%) LR+: Not reported *Computer Models (n=8043; 5 studies)* Sensitivity (0% sensitivity studies excluded): 96% (95% CI: 92%, 100%) with no heterogeneity ($Q=4.4_4$, $P=0.36$) Specificity (0% sensitivity studies excluded): 34% (05% CI: 27%, 44%) with significant heterogeneity ($Q=170_4$, $P<0.0001$) LR+ for malignancy: 1.49 (95% CI: 1.33, 1.67) *Overall Accuracy of all Approaches* Pooled DOR: 7.49 (95% CI: 4.37, 12.8) with significant heterogeneity ($\chi^2=44_{16}$, $P<0.001$) No funnel plot asymmetry. Moderate accuracy of AUC 0.80 (95% CI 0.73, 0.85) according to ROC. LR+: Not reported *Weight Loss (n=48,499; 8 studies)*	

Reference	Study Design	Patient Characteristics	Type of Relationship Follow-up	Factors Assessed Main Findings	Quality Comments
				Sensitivity: 49% (95% CI: 37%, 65%) with significant heterogeneity ($Q=34.0_7$, $P<0.001$) Specificity: 84% (95% CI: 81%, 87%) with significant heterogeneity ($Q=143_7$, $P<0.001$) LR+: Not reported *Dysphagia (n=9646; 5 studies)* Sensitivity: 39% (95% CI: 23, 66) with significant heterogeneity ($Q=19.5_4$, $P<0.001$) Specificity: 85% (95% CI: 78, 92) with significant heterogeneity ($Q=852_4$, P<0.001) LR+: Not reported *Anemia (n=42,3247; 4 studies)* Sensitivity (0% sensitivity study excluded): 13% (95% CI: 8%, 20%) with no heterogeneity ($Q=0.66_2$, $P=0.72$) Specificity (0% sensitivity study excluded): 95% (95% CI: 92%, 97%) with significant heterogeneity ($Q=77_2$, $P<0.001$) LR+: Not reported	
From Vakil 2006 Bytzer 1992	Single center Blinded	n=878 Inclusion: Dyspepsia patients Exclusion: Acute GI bleeding; previous gastric surgery	Diagnostic performance of computer model for prediction of malignancy	*Overall Accuracy (95% CI)* PPV: 1.9% (0.9%, 3.6%) NPV: 99.3% (97.8%, 99.8%) LR+: 1.4 (0.87, 1.7) LR-: 0.54 (0.19, 1.2)	NA

Reference	Study Design	Patient Characteristics	Type of Relationship Follow-up	Factors Assessed Main Findings	Quality Comments
				DOR: 2.6 (0.6, 14.9)	
From Vakil 2006 Bytzer 1996	2 centers Blinded	n=1233 Inclusion: Dyspepsia patients Exclusion: Acute GI bleeding; previous gastric surgery	Diagnostic performance of clinical opinion for prediction of malignancy	*Overall Accuracy (95% CI)* PPV: 9.1% (1.1%, 29%) NPV: 98.9% (98%, 99.4%) LR+: 8.1 (2.1, 25.6) LR-: 0.88 (0.63, 0.98) DOR: 9.2 (0.9, 44.8)	NA
From Vakil 2006 **From Vakil 2006** Heikkinen 2000	4 centers Blinded	n=400 Inclusion: Dyspepsia patients Exclusion: Not reported	Diagnostic performance of clinical opinion for prediction of malignancy	*Overall Accuracy (95% CI)* PPV: 8.3% (2.1%, 38%) NPV: 99.6% (99%, 99.9%) LR+: 1.4 (1.03, 1.5) LR-: 0.45 (0.18, 0.96) DOR: 4.2 (0.1, 36)	NA
From Vakil 2006 Manes 2002	21 centers Blinded	n=706 Inclusion: Presenting with dyspepsia during a 1-wk period Exclusion: Not reported	Diagnostic performance of alarm features for prediction of malignancy	*Overall Accuracy (95% CI)* PPV: 11% (3%, 25%) NPV: 99.7% (99%, 100%) LR+: 13.7 (5.9, 22.5) LR-: 0.35 (0.1, 0.74) DOR: 39.2 (5.3, 439)	NA
From Vakil 2006 Meineche-Schmidt 2002	82 centers Blinding unclear	n=1441 Inclusion: Presenting with dyspepsia during a 2-yr period Exclusion: Not reported	Diagnostic performance of alarm features, weight loss, dysphagia, anemia for prediction of malignancy	*Overall Accuracy of Alarm Features (95% CI)* PPV: 0.7% (0.2%, 1.7%) NPV: 99.5% (99%, 100%) LR+: 1.2 (0.5, 1.9) LR-: 0.84 (0.36, 1.3) DOR: 1.5 (0.3, 7.8)	NA Patients were not consecutive

Reference	Study Design	Patient Characteristics	Type of Relationship Follow-up	Factors Assessed Main Findings	Quality Comments
				Weight Loss (95% CI) PPV: 1.5% (0.3%, 4.3%) NPV: 99.6% (99%, 99.9%) LR+: 2.8 (1.02, 5.3) LR-: 0.72 (0.35, 0.997) *Dysphagia (95% CI)* PPV: 1.5% (0.3%, 4.3%) NPV: 99.6% (99.1%, 99.9%) LR+: 2.8 (1.02, 5.3) LR-: 0.72 (0.35, 0.996) PPV: 0% (0%, 9.7%) NPV: 99.5% (98.9%, 99.8%) LR+: 0 (0, 13.8) LR-: 1 (0.63, 1)	
From Vakil 2006 Numans 2001	9 centers Blinding unclear	n=2014 Inclusion: Dyspepsia; first endoscopic evaluation Exclusion: Not reported	Diagnostic performance of computer model, weight loss, dysphagia for prediction of malignancy	*Overall Accuracy of Computer Model (95% CI)* PPV: 1.6% (0.9%, 2.7%) NPV: 99.2% (97%, 99.9%) LR+: 1.1 (0.83, 1.2) LR-: 0.56 (0.16, 1.6) DOR: 28.7 (2.8, 152) *Weight loss (95% CI)* PPV: 6.7% (3.7%, 11%) NPV: 98.9% (98%, 99.6%)	NA

Reference	Study Design	Patient Characteristics	Type of Relationship Follow-up	Factors Assessed Main Findings	Quality Comments
				LR+: 2.9 (1.9, 3.7) LR-: 0.43 (0.22, 0.71) *Dysphagia (95% CI)* PPV: 7.1% (3.9%, 11.9%) NPV: 98.8% (97.6%, 99.5%) LR+: 3 (1.9, 4) LR-: 0.48 (0.21, 0.68)	
From Vakil 2006 Sung 2001	4 centers Blinding unclear	n=2627 Inclusion: Dyspepsia for ≥4 wks Exclusion: Predominant heartburn, regurgitation, or diarrhea	Diagnostic performance of alarm features, weight loss, dysphagia, anemia for prediction of malignancy	*Overall Accuracy of Alarm features (95% CI)* PPV: 1.2% (0.7%, 1.8%) NPV: 99.6% (99%, 99.9%) LR+: 1.4 (1.03, 1.5) LR-: 0.45 (0.18, 0.96) DOR: 3.0 (1.0, 12.3) *Weight loss (95% CI)* PPV: 15.8% (3.4%, 39.6%) NPV: 99.2% (98.8%, 99.5%) LR+: 21.2 (6.8, 60) LR-: 0.87 (0.68, 0.96) *Dysphagia (95% CI)* PPV: 3.4% (0.09%, 17.8%) NPV: 99.2% (98.7%, 99.5%) LR+: 4 (0.7, 20.4) LR-: 0.97 (0.8, 1)	NA

Reference	Study Design	Patient Characteristics	Type of Relationship Follow-up	Factors Assessed Main Findings	Quality Comments
				Anemia (95% CI) PPV: 1.25% (0.03%, 6.8%) NPV: 99.1% (98.7%, 99.5%) LR+: 1.4 (0.25, 7) LR-: 0.99 (0.81, 1.02)	
From Vakil 2006 Fjosne 1986	Single center No blinding	n=1526 Inclusion: All patients referred for upper GI endoscopy Exclusion: Not reported	Clinical opinion for prediction of malignancy	*Overall Accuracy (95% CI)* PPV: 35% (25%, 47%) NPV: 98.3% (97.5%, 99%) LR+: 15.6 (10.5, 22.4) LR-: 0.49 (0.35, 0.63) DOR: 32.1 (16.4, 62)	NA
From Vakil 2006 Hansen 1998	Single center Blinding unclear	n=612 Inclusion: Dyspepsia; >18 yrs of age Exclusion: Upper GI bleeding; jaundice; acute abdomen; previous upper GI surgery	Diagnostic performance of alarm features	*Overall Accuracy (95% CI)* PPV: 0% (0%, 26%) NPV: 99.3% (98%, 99.8%) LR+: 0 (0-27) LR-: 1.02 (0.44, 1.01) DOR: 0 (0, 82)	NA
From Vakil 2006 Mann 1983	Single center Blinding unclear	n=235 Inclusion: Endoscopy referral Exclusion: Not reported	Diagnostic performance of computer model for prediction of malignancy	*Overall Accuracy (95% CI)* PPV: 8% (3.9%, 14%) NPV: 99.1% (95%, 100%) LR+: 1.8 (1.2, 2.1) LR-: 0.19 (0.03, 0.78) DOR: 9.5 (1.3, 415)	NA Computer model used data that was prospectively collected but retrospectively

Reference	Study Design	Patient Characteristics	Type of Relationship Follow-up	Factors Assessed Main Findings	Quality Comments
					fitted to findings in the study population and is likely to overestimate accuracy
From Vakil 2006 Holdstock 1986	Single center Blinding unclear	n=1279 Inclusion: Endoscopy referral Exclusion: Gastric surgery; previous endoscopy	Diagnostic performance of computer model for prediction of malignancy	*Overall Accuracy (95% CI)* PPV: 6.7% (5%, 8.7%) NPV: 100% (99.3%, 100%) LR+: 1.8 (1.6, 1.8) LR-: 0 (0, 0.16) DOR: ∞(10 to ∞)	NA Unclear whether patients were consecutive
From Vakil 2006 Voutilainen 2003	Single center Blinding unclear	n=3378 Inclusion: Endoscopy referral over 1-yr period Exclusion: Not reported	Diagnostic performance of alarm features for prediction of malignancy	*Overall Accuracy (95% CI)* PPV: 1.1% (0.6%, 1.9%) NPV: 99.8% (99.5%, 99.9%) LR+: 2.2 (1.4, 2.7) LR-: 0.44 (0.2, 0.79) DOR: 5 (1.6, 18.1)	NA Unclear whether patients were consecutive
From Vakil 2006 Thomson 2003	39 centers Blinded	n=1037 Inclusion: Dyspepsia Exclusion: Documented upper GI pathology; previous GI surgery; previous endoscopy; *H. Pylori* treatment ≤6 mos before study; proton pump inhibitor ≤30 days	Diagnostic performance of alarm features for prediction of malignancy	*Overall Accuracy (95% CI)* PPV: 0% (0%, 12%) NPV: 99.8% (99%, 100%) LR+: 3.9 (3.1, 4.6) LR-: 0.52 (0.4, 0.64) DOR: 7.4 (4.8, 11.6)	NA

Reference	Study Design	Patient Characteristics	Type of Relationship Follow-up	Factors Assessed Main Findings	Quality Comments
		before study			
From Vakil 2006 Lieberman 2004	Multicenter No blinding	n=36,357 Inclusion: Upper GI endoscopy; alarm symptoms other than dysphagia	Diagnostic performance of alarm features, weight loss, anemia for prediction of malignancy	*Overall Accuracy of Alarm features (95% CI)* PPV: 0.9% (0.7%, 1.2%) NPV: 99.9% (99.8%, 100%) LR+: 3.9 (3.1, 4.6) LR-: 0.52 (0.4, 0.64) DOR: 7.4 (4.8, 11.6) *Weight loss (95% CI)* PPV: 2.7% (1.9%, 3.7%) NPV: 99.9% (99.8%, 99.9%) LR+: 11.2 (8.6, 14) LR-: 0.6 (0.49, 0.7) *Anemia (95% CI)* PPV: 1% (0.5%, 1.7%) NPV: 99.8% (99.7%, 99.8%) LR+: 4.1 (2.4, 6.7) LR-: 0.89 (0.81, 0.95)	NA Unclear whether patients were consecutive; 2% of patients excluded because of incomplete data
From Vakil 2006 Kapoor 2005	Single center No blinding	n=3637 Inclusion: Suspected upper GI cancer; GP requested immediate (within 2 wks) endoscopy Exclusion: Not reported	Computer model, weight loss, dysphagia, anemia for prediction of malignancy	*Overall Accuracy (95% CI)* PPV: 4% (2.9%, 5.2%) NPV: 99.3% (98.2%, 99.8%) LR+: 1.4 (1.2, 1.5) LR-: 0.24 (0.09, 0.56) DOR: 5.8 (2.1, 22.3)	NA

Reference	Study Design	Patient Characteristics	Type of Relationship Follow-up	Factors Assessed Main Findings	Quality Comments
				Weight loss (95% CI) PPV: 6.8% (4.8%, 9.2%) NPV: 97.6% (96.7%, 98.4%) LR+: 1.9 (1.5, 2.3) LR-: 0.64 (0.48, 0.8) *Dysphagia (95% CI)* PPV: 6.5% (4.7%, 8.75%) NPV: 97.6% (96.6%, 98.4%) LR+: 1.8 (1.4, 2.1) LR-: 0.62 (0.46, 0.8) *Anemia (95% CI)* PPV: 4.9% (2.3%, 9.1%) NPV: 96.3% (95.3%, 97.2%) LR+: 1.3 (0.7, 2.4) LR-: 0.97 (0.86, 1.03)	
From Vakil 2006 Crean 1994	Single center No blinding	n=1540 Inclusion: Upper GI symptoms; recruited when participating clinician available Exclusion: Not reported	Diagnostic performance of weight loss for prediction of malignancy	Overall *Accuracy (95% CI)* PPV: 8.3% (5.9%, 11.4%) NPV: 98.7% (97.9%, 99.3%) LR+: 2.7 (2.2, 3.2) LR-: 0.38 (0.24, 0.57)	NA Patients were not consecutive
From Vakil 2006 Adang 1995	Single center No blinding	n=2900 Inclusion: Upper GI symptoms or GI bleeding	Diagnostic performance of weight loss, dysphagia	*Overall Accuracy of Weight loss (95% CI)* PPV: 11.7% (7%, 18.1%) NPV: 98% (97.4%, 98.5%)	NA 3% of patients had limited or

Reference	Study Design	Patient Characteristics	Type of Relationship Follow-up	Factors Assessed Main Findings	Quality Comments
		Exclusion: Not reported		LR+: 5.3 (3.3, 8) LR-: 0.79 (0.68, 0.88) *Dysphagia (95% CI)* PPV: 5.2% (2.4%, 9.6%) NPV: 99.8% (99.5%, 99.9%) LR+: 10.4 (6.1, 14.5) LR-: 0.42 (0.21, 0.68)	no endoscopic results or
From Vakil 2006 Johannessen 1990	Single center Blinding unclear	n=930 Inclusion: Referred for upper GI endoscopy; alimentary tract symptoms Exclusion: Missing symptom data; insufficient endoscopy data	Diagnostic performance of weight loss for prediction of malignancy	*Overall Accuracy (95% CI)* PPV: 2.8% (1.1%, 5.7%) NPV: 99.7% (98.9%, 100%) LR+: 2.9 (1.7, 3.7) LR-: 0.3 (0.09, 0.75)	NA

Appendix D. Summary of Findings Table for Individual Studies

Reference	Study Design	Sample size; patient Characteristics	Type of Relationship Follow-up	Factors Assessed Main Findings	Quality Comments
Bowrey 2006	Cross-sectional study using a prospectively compiled database	n=4018 Esophagogastric carcinoma , 123 Median age, yrs: 66; 69 (*P*=0.02) Sex (M:F): 13:65; 80:24 (NS) Inclusion: Referral and completion of gastroscopy Exclusion: Not reported	Association between alarm symptoms and esophagogastric cancer and between age and carcinoma Differences in disease characteristics between asymptomatic and symptomatic carcinoma. Median follow-up (to assess survival): 120 mos (range 87-161)	*Association of age w/ esophagogastric carcinoma (n=4009):* Age (yrs): <35 vs ≥35, 0 vs 3.3%; <45 vs ≥45, 0.4%, 3.9%; <55% vs ≥55, 0.9% vs 5.1% Frequency of cancer increased significantly w/ increasing age (x^2=126; *P*<0.00001) *Prevalence of alarm symptoms in patients with esophagogastric carcinoma:* 85% (104/123) *% patients with esophagogastric carcinoma (n=123) who had UICC stage III-IV cancer, according to alarm symptom:* Epigastric mass, 100%; anemia, 89%; vomiting, 62%; dysphagia, 78%; weight loss, 87%; uncomplicated dyspepsia, 48% *Differences in patients with esophagogastric carcinoma (n=123): No Alarm Symptoms, Alarm Symptoms* UICC tumor stage I-IV, n (%) (global *P*<0.001): I: 8 (42%); 9 (9%), II: 2(11%); 18(17%) III: 7(37%); 28 (27%) IV: 2(11%); 52(50%) Surgical resection, n (%): 18(95%); 52 (50%); *P*<0.001	Fair Financial disclosure was not reported Not clear if study population is representative of wider pt population; no ORs reported; not clear if the structured pt questionnaire adequately detected presence of alarm symptoms or not; no simultaneous adjustment for multiple factors (e.g., age, sex, presence of alarm symptoms

Reference	Study Design	Sample size; patient Characteristics	Type of Relationship Follow-up	Factors Assessed Main Findings	Quality Comments
				Median survival (mos), n (95% CI): 39 (9-69); 11 (8-14) (*P*=0.01) 5-yr survival, n (%): 8(42); 13(13); *P*=0.005 (only survivors were those pts who had undergone resection)	
Connor 2004	Retrospective chart review	n=264 Mean age 57 yrs Men: 95% NSAID use: 51% Symptoms: dyspepsia only, 70%; dyspepsia + GERD, 23%; dyspepsia + nausea + vomiting, 6%; dyspepsia + GERD + nausea + vomiting, 1% Diagnosis: Barrett's esophagus, 6.1%; erosive esophagitis, 23.8%; gastric ulcer, 7.2%; duodenal ulcer, 2.3% Inclusion: Upper endoscopy for dyspepsia; dyspepsia symptoms ≥3 mos Exclusion: Concurrent alarm symptoms (weight loss, anemia, dysphagia, GI bleeding, or abdominal mass); peptic ulcer disease; previous upper GI	Association between presence of Barrett's esophagus and/or erosive esophagitis and patient demographics (age, gender, race), ASA/NSAID use, and presence of hiatal hernia in patients undergoing endoscopy No follow-up	30% of patients had esophageal lesions Demographics (Barrett's; erosive esophagitis): Number: 16; 62 Age, yrs: 60.1; 57.2 % Men: 100; 98.2 Caucasian race, %: 93.8, 78.9 The only association that was significant was hiatal hernia, which was significantly associated with the presence of either Barrett's esophagus or erosive esophagitis (*P*=0.0032)	Poor Conflicts of interest not reported Retrospective; tertiary care center with elderly and cormorbid patient base; univariate analysis only

Reference	Study Design	Sample size; patient Characteristics	Type of Relationship Follow-up	Factors Assessed Main Findings	Quality Comments
Madan 2005	Case series	n=70 Mean age: 34.4±11.11 yrs Men/Women: 47/23 Duration of symptoms: 2.88±3.27 yrs Inclusion: 19-79 yrs of age; heartburn and/or regurgitation ≥2 days/wk for ≥6 wks Exclusion: Dysphagia symptoms; evidence of stricture; alarm symptoms (weight loss, GI bleed, anemia)	Study conducted to find a single test or combination of tests to serve as a gold standard for diagnosis of GERD. All patients underwent omeprazole challenge; endoscopy; histology; barium swallowing; scintigraphy; 24-hr pH monitoring For purposes of evaluating each test, a concordance of ≥3 positive tests was used as the gold standard No follow-up	39/109 patients recruited were excluded from analysis, primarily because data on all 6 tests were not available. NOTE: *J* statistic is a measure of diagnostic performance that simultaneously reflects sensitivity and specificity. <u>Test results for all patients</u> *Positive result, Sensitivity, Specificity, PPV, NPV, Accuracy, J-value:* Omeprazole challenge: 70%, 84.4%, 56%, 77.5%, 66.6%,74.2%, 0.4 Endoscopy: 47.1%, 64.4%, 84%, 87.8%, 56.7%, 0.48 Histology: 68.6%, 82.2%, 60%, 78.75, 65.1%, 74.2%, 0.42 Barium swallow: 20%, 26.65, 92%, 85.7%, 41%, 50%, 0.18 Scintigraphy: 11.4%, 15.5%, 96%, 87.5%, 38.7%, 38.7%, 44.2%, 0.11 pH monitoring: 68.6%, 77.7%, 92%, 94.5%, 69.6%, 82.2%, 0.69 (BEST SINGLE TEST) Among patients with endoscopy-negative reflux disease, erosive esophagitis were significantly older (*P*=0.006) and had a history of regular alcohol consumption	Fair Conflicts of interest not reported Variability in duration of symptoms (long-term treatment with antisecretory drugs could alter endoscopic aspect and/or histologic data), but authors did not comment on representativeness of study sample; 35% of enrolled patients were excluded from study; no estimation of variability in sensitivity/specificity values

Reference	Study Design	Sample size; patient Characteristics	Type of Relationship Follow-up	Factors Assessed Main Findings	Quality Comments
				(*P*=0.048) than those who had no erosive eophagitis Test results for endoscopy-negative patients (n=54) *Positive result, Sensitivity, Specificity, PPV, NPV, Accuracy, J-value:* Omeprazole challenge: 93.75%, 57.1%, 62.5%, 92.3%, 72.9%, 0.5 pH monitoring: 93.3%, 90.4%, 87.5%, 955, 91.6%, 0.83 (BEST SINGLE TEST) Histology: 100%, 57.1%, 64%, 100%, 75.6%, 0.57 Scintigraphy: 12.5%, 95.2%, 66.6%, 58.85, 59.4%, 0.07 Barium swallow: 6.25%, 90.4%, 33.3%, 55.8%, 54%, -0.04 Best combination of tests: OCT+endoscopy+histology has a sensitivity of 100% for GERD. Given the high prevalence of GERD in the study sample (91.4%), pH monitoring could be reserved for patients with negative results in the combination test.	
Marmo 2005	Cross-sectional (data	Training sample, 5224 External validation sample, 3684	Diagnostic performance of predictors derived	In both samples, patients w/ malignancy were significantly (*P*<0.0001) older than patients w/out (66.2 vs 49.7; 59.5 vs 45.3)	Good Financial disclosure

Reference	Study Design	Sample size; patient Characteristics	Type of Relationship Follow-up	Factors Assessed Main Findings	Quality Comments
	prospectively entered by endoscopist) Training sample was used to establish a 5th percentile age cutoff value	(reflects exclusion of 911 from training sample and 645 from validation sample because of complicated dyspepsia) *Final Training; Validation:* Mean age: 49.3 yrs; 48.6 yrs Men: 58%, 58% % pts w/ malignancy who were >45 yrs: 82%; 75% % patients w/malignancy who were women: 27.3%; 50% In overall population, before exclusion of complicated dyspepsia, training and validation samples were very similar demographic and clinical characteristics. Inclusion: Uninvestigated (no prior x-ray or endoscopy) and uncomplicated (no alarm symptoms or chronic use of NSAIDs) dyspepsia; complete diagnostic examination of the esophagus, stomach, and duodenum; no proven preprocedure upper GI diagnosis; no previous variceal treatment dilation,	from training sample for detecting malignancy in uncomplicated dyspepsia Diagnostic surrender=ratio of # patients w/ malignancy plus satisfaction of age/sex cutoff criteria to # patients with malignancy and not meeting cutoff criteria. No follow-up	and women w/malignancy were older than men w/ malignancy (72.7 vs 63.6, *P*<0.05; 61.7 vs 49.6, *P*=0.08) *Training sample results using age and sex as predictors:* Women less likely than men to have malignancy. Age cut-off 35 yrs for men and 57 yrs for women. NNE to detect 1 cancer: Age >45, 160; female sex, 367; age >35 and male sex, 154; age >57 and female sex, 108 *Diagnostic performance in validation sample (95% CI):* Age according to guidelines cutoff (<45 vs >45 yrs): OR=0.4194 (0.114 to 1.399) NNE: 400 <45;174 >45 Diagnostic surrender: 75% (47.6 to 92.7) Sensitivity: 0.57% (0.3 to 1) Specificity: 99.7% (99.3 to 99.9) LR +: 2.262 (1.233 to 9.777) LR -: 0.996 (0.992 to 1.001) Sex (male vs female): OR: 1.383 (0.472 to 4.65) NNE: 270 men; 196 women Diagnostic surrender: 50% (24.6 to 75.3) Sensitivity: 0.37% (0.16 to 0.74) Specificity: 99.4% (98.9 to 99.7) LR+: 0.723 (0.282 to 1.858) LR-: 1.001 (0.997 to 1.006) Gender for Age (men <35 vs men >35):	was not reported Lack of blinding of endoscopist

Reference	Study Design	Sample size; patient Characteristics	Type of Relationship Follow-up	Factors Assessed Main Findings	Quality Comments
		stenting, tumor ablation, or foreign body removal; no recent endoscopy or barium meal Exclusion: Not reported		OR: 0.4642 (0.59 to 3.73) NNE: 526 for <35; 239 for >35 Diagnostic surrender: 87.5% (24.6 to 75.3) Sensitivity: 0.37% (0.16 to 0.74) Specificity: 99.4% (98.9 to 99.7) LR +: 2.15 (0.34 to 13.38) LR-: 0.997 (0.992 to 1.007) Gender for Age (women <57 vs women >57): OR: 0.1347 (0.034 to 0.736) NNE: 555 for <57; 77 for >57 Diagnostic surrender: 75% (34.9 to 96.8) Sensitivity: 1.34% (0.49 to 2.89) Specificity: 99.8% (99.3 to 99.9) LR+: 7.343 (1.701 to 31.705) LR-: 0.9888 (0.972 to 0.996)	
Rossi 2002	Prospective case series	n=1777 Mean age: 60 yrs, range 16-92 Men: 52% Inclusion: Referral for upper GI endoscopy Exclusion: None	Association of ASGE indications with endoscopic findings	Pts underwent endoscopy primarily for dyspepsia (53.5%) associated with age >45 yrs (27%), failure of therapy (15.6%), or alarm symptoms (13%). Indication for endoscopy was appropriate by American Society for Gastrointestinal Endoscopy (ASGE) criteria in 84.4% of cases. *% patients with endoscopi diagnosis (ASGE indications present; non-ASGE):* Total: 47.4%; 28.8% (OR: 2.23; 99% CI: 1.55, 3.22; *P*<0.01) Erosive gastritis: 24.3%; 14.7% (OR: 1.86; 99% CI: 1.17, 2.95; *P*<0.01) Erosive esophagitis: 15.2%; 10.9% (OR: 1.48; 99% CI: 0.87, 2.52; *P*<0.05)	Fair Conflicts of interest not reported Similarity in duration of symptoms unknown

Reference	Study Design	Sample size; patient Characteristics	Type of Relationship Follow-up	Factors Assessed Main Findings	Quality Comments
				Barrett's esophagus: 3.4; 0.4 (OR: 9.76; 99% CI; 0.72, 132; *P*<0.05)	
Veldhuyzen Van Zanten 2006	Cross sectional study	1040 pts who underwent endoscopy Gastric biopsies were obtained from all pts for histological diagnosis of *Helicobacter pylori* infection 95% of pts were Caucasian Inclusion criteria: >18 yrs of age; primary complaint of ≥3 mos of either continuous or intermittent dyspepsia of any severity Exclusion criteria: Documented history of upper GI pathology or surgery; clinical endoscopic or radiological evaluation of dyspepsia in past 6 months or on > 2 occasions in past 10 years; use of proton pump inhibitors w/in 30 days or H_2 receptor antagonists w/in 14 days of study enrollment.	Relationship between prevalence of Barrett's Esophagus and prevalence of potential risk factors for disease.	*Prevalence of Barrett's Esophagus suspected on endoscopy:* 5% (53/1040) Of 53 suspected cases: 30 pts >50 yrs; 14 pts >60 yrs; 9pts >65 *Prevalence of Barrett's Esophagus confirmed histologically:* n=25; 2.4% [mean age, 53 yrs; M/F, 17/8, *P*=0.068). Mean duration of dyspeptic symptoms in 25 confirmed pts: 10 yrs Pts w/ symptoms <5 yrs duration: n=11(44%) Pts w/ symptoms <1 yr duration: n=4 (16%) Of 25 confirmed pts, 16 (64%) reported either heartburn or acid regurgitation as dominant dyspepsia symptom compared w/ 377/1015 (37%) of pts w/o Barrett's Esophagus (*P*=0.0062). NS differences in BMI between pts w/ confirmed Barrett's Esophagus and population as a whole. *Prevalence of confirmed Barrett's Esophagus by age*:	Poor Financially supported by AztraZeneca Canada Potential confounding factors not controlled for when identifying identify associations between various factors and disease outcomes; missing data; according to authors, study was not specifically designed to assess prevalence for Barrett's Esophagus and prevalence of disease may have been underestimated

Reference	Study Design	Sample size; patient Characteristics	Type of Relationship Follow-up	Factors Assessed Main Findings	Quality Comments
				>50 yrs: 15/379; 4% Of these 15 pts, 5 pts >60 yrs (3%); 5 pts >65 yrs (5%) 2 pts >70 yrs (5.7%) Disease significantly more common in pts >50 yrs (4%; 15/379) compared with younger pts (1.5%; 10/661) (*P*=0.013) *Prevalence of hiatus hernia:* 235/1040; 23% Confirmed Barrett's Esophagus: 3% (7/235) of pts also diagnosed w/ hiatus hernia compared w/ 2% (18/805) of pts w/o hiatus hernia (NS) *Prevalence of reflux esophagitis:* 17/25 (68%) confirmed Barrett's Esophagus pts compared w/ 434/1015 (43%) of pts w/o Barrett's Esophagus *Prevalence of Helicobacter Pylori:* *Helicobacter pylori* present in 7/25 (28%) confirmed cases and absent in 18/25 (72%) (*P*=0.012) Overall prevalence of Helicobacter Pylori: 30% in 1013 histologically confirmed pts	

Reference	Study Design	Sample size; patient Characteristics	Type of Relationship Follow-up	Factors Assessed Main Findings	Quality Comments
				Confirmed Barrett's Esophagus observed in pts w/ dominant reflux-like (4%), ulcer-like (1%), and dysmotility-like symptoms (2%).	
Westbrook 2005	Retrospective cohort study (chart review and telephone interview)	n=302 Mean age: Men, 48 yrs; Women, 52 yrs Endoscopic diagnosis: esophagitis, 126; esophagitis and peptic ulcer, 26; normal findings with reflux symptoms, 53; normal findings without reflux symptoms, 66; peptic ulcer, 31 Inclusion: >16 yrs of age; dyspeptic symptoms, initial upper GI endoscopy; at least 1 of 10 upper GI symptoms (epigastric pain, nausea, vomiting, heartburn, acid regurgitation, anorexia, dysphagia, bloating, early satiety, belching) Exclusion: Inpatient; GI bleed; history of peptic ulcer disease or cancer; previous endoscopy; history of gastric surgery	Change in symptom status and medication at long-term follow-up after endoscopic diagnosis Initial assessment: 18 mos following endoscopy Follow-up: 8-9 yrs following endoscopy	399/495 patients (81%) eligible for initial assessment; there were no differences between eligible and ineligible groups. 302/399 patients (76%) were available for long-term follow-up, there were no differences between completers and dropouts in age, sex, or diagnosis. No association between diagnosis and age or diagnosis and sex. 62/119 patients (52%) with normal endoscopic results and 116/183 patients (63%) with abnormal endoscopic results were still symptomatic long-term follow-up; no significant global association between endoscopic diagnosis and symptom outcome. However, the proportion of patients taking H2RA and receiving a normal endoscopic diagnosis diminished from 40% to 20%. No change in use of PPIs with respect to diagnosis was observed. (Proportions calculated from data supplied by study authors.)	Good Financial disclosure was not reported, but study funding was noncommercial Follow-up data obtained by telephone interview

Appendix E. Summary of Findings Table for Economic Evaluation Studies

Reference (type of evidence*)	Outcomes	No of Participants (No of trials)	Participant characteristics	Intervention	Median follow-up	Costs (Range)	Effectiveness (Range)	ICER (95% CI)	CEA Curve	Quality‡	Comments
Barkun 2010 (Economic Evaluation - Canada)	1.Symptom-free mos 2.QALYs 3.Dir.costs ($C) 4.ICER 5.CEACurve	4 CADET studies n=2236	Adults pres to PCP with 3-mo uninvestigated dyspepsia (CanDys def'n)	1.CanDysOmeprazole 2. CanDysRanitidine 3. Emp. Omeprazole 4. Emp. Ranitidine 5. Endoscopy+PPI 6. Endoscopy+H2RA	12 mo	1. **217** (139-448) 2. **252** (128-635) 3. **213** (73-777) 4. **255** (59-1,276) 5. **1,560** (647-4,533) 6. **1,225** (756-2,108)	**QALYs** 1.**0.9444** (0.9401-0.9490) 2. **0.9419** (0.9378-0.9462) 3. **0.9425** (0.9386-0.9465) 4. **0.9401** (0.9364-0.9438) 5. **0.9577** (0.9533-0.9621) 6. **0.9557** (0.9595-0.9610)	**C$/iQALY** **1v3. +26,321** (-519,155 to +492,323) **2v3. -121,104** (-742,429 to +727,877) **4v3. +58,448** (-746,485 to +703,044) **6v3. +82,497** (+20,709 to +190,546) **5v3. +92,690** (+18,133 to +306,405) **5v1. +109,163** (+27,607 to +355,615) **6v1. +108,415** (+37,555 to +253,817) **6v5. +372,704** (-2.25M to +2.54M)	CanDys Omeprazole most cost-effective at WTP C$30K-70K/QALY	Good	Individual pt data from a series of Canadian studies. Concludes that no strategy is the overwhelming cost-effective choice.

Reference (type of evidence*)	Outcomes	No of Participants (No of trials)	Participant characteristics	Intervention	Median follow-up	Costs (Range)	Effectiveness (Range)	ICER (95% CI)	CEA Curve	Quality‡	Comments
Barton 2008 (2nd-Order Simulation Model – US)	1. QALYs 2. Dir. Costs ($US) 3.ICER 4. CEA Curve	n=10,000 hypothetical patients	Hypothetical adults with uninvestigated dyspepsia	1. Antacid (base) 2. H2RA 3. PPI then scope (no bx) 4. PPI 5. Scope (no bx) 6. ELISA and treat 7. UBT-treat-PPI-scope 8. Scope (biopsy all) 9. UBT and treat 10. PPI then scope (biopsy all)	5 years	**US$-60 yo** 1. 2842 2. 4103 3. 4298 4. 4070 5. 4557 6. 4087 7. 4315 8. 4486 9. 4087 10. 4334 **US$-30 yo** 1. 1976 2. 2897 3. 3591 4. 3986 5. 3340 6. 3842 7. 4008 8. 3581 9. 3598 10. 3656	**QALY-60yo** 1. 4.2031 2. 4.2281 3. 4.3665 4. 4.3680 5. 4.3712 6. 4.3852 7. 4.3852 8. 4.3860 9. 4.3876 10. 4.3942 **QALY-30yo** 1. 4.2004 2. 4.2203 3. 4.3381 4. 4.3387 5. 4.3404 6. 4.3488 7. 4.3496 8. 4.3497 9. 4.3511 10. 4.3541	**US$/QALY-60yo** 2v1. Domin. 3v1. Domin. 4v1. 7,440 5v1. Domin. 6v1. 6,830 7v1. Domin. 8v1. Domin 9v1. 6740 10v1. 7800 3v9. 37,500 **US$/QALY-30yo** 2v1. 46,300 3v1. Domin. 4v1. 9,740 5v1. Domin. 6v1. 10,800 7v1. Domin. 8v1. Domin. 9v1. 10,800 10v1. 10,900 3v5. 23,100	For 30yo, neither T&T nor EGD likely to be CE (slowly rising CEAC). PPI flat curve vs. H2RA For 60yo, T&T is flat & shallow CE across WTP	Good	Empirical PPI is the choice in 30yo In pts >55yo, T&T is most CE, early endoscopy is reasonable

Reference (type of evidence*)	Outcomes	No of Participants (No of trials)	Participant characteristics	Intervention	Median follow-up	Costs (Range)	Effectiveness (Range)	ICER (95% CI)	CEA Curve	Quality‡	Comments
Duggan 2008 (RCT – UK)	1. Symptom &Satisfaction Questionnaire 2. GP consult for dyspepsia 3. Dyspepsia prescribing 4. Hospital referral for dyspepsia 5. Endoscopy	762 recruited; 753 completed	Adults presenting to a GP between 1995-1998 with uninvestigated dyspeptic symtoms	1. Early EGD 2. Test&Refer 3. Test&Treat 4. Empiric PPI	12mo	**£/12mo** 1. 265 2. 199 3. 159 4. 174	**% symptom-free/12 mo** 1. 55% 2. 53% 3. 52% 4. 50%	NA	T&T dominates at low WTP; EGD overcomes but point of intersection sensitive to EGD costs	Fair	Empiric PPI pts had high rates of subsequent EGD; T&T cheapest due to lowest # of EGDs overall
García-Altés 2005 (Decision analysis – Spain)	% asymptomatic patients	NA	Adults presenting to GP with uninvestigated dyspepsia	1. Endoscopy 2. Score & Scope (*locally validated instrument*) 3. Test & Scope 4. Test & Treat 5. Empiric PPI	NA	**€/patient** 1. 157.53 2. 105.85 3. 202.82 4. 152.91 5. 75.89	**% symptom-free** 1. 38.4 2. 34.7 3. 35.5 4. 35.3 5. 28.5	**€/asymptomatic patient** 1v5. 1396.85 2v5. 483.17 3v5. Dominated 4v5. Dominated	NA	Fair	Sensitivity analysis shows values of ICER vary with age but order does not

Reference (type of evidence*)	Outcomes	No of Participants (No of trials)	Participant characteristics	Intervention	Median follow-up	Costs (Range)	Effectiveness (Range)	ICER (95% CI)	CEA Curve	Quality‡	Comments
Ginannini 2008 (RCT – Italy)	1. Symptom score 2. Direct medical cost 3. QOLRAD	612	Patients 18-70yo at GI centers w/3mo typical GERD symptoms, no alarm symptoms	1. Empiric Omeprazole 2. Endoscopy	24wk	**€/patient** 1. 88.34 2. 127.06	**% Responders** 1. 71.8% 2. 68.3% **QOLRAD** No sig difference, either group	NA	NA	Poor	Empiric tx and positive endoscopy got same 40mg PPI; negative endoscopy got 20mg PPI.
Kjeldsen 2007 (CE analysis of RCT data – Denmark)	1. Days free of dyspepsia 2. % symptom-free at 1 yr	368	Dyspeptic patients ≥18yo at PC practice	1. Empiric PPI x 2 weeks 2. Endoscopy	12 mo	**€/Patient (including indirect)** 1. 488 (407-569) 2. 887 (775-998) **€/Patient (Direct only)** 1. 321 (241-400) 2. 570 (462-688)	**Days w/o dyspepsia (pt report)** 1. 205.0 2. 207.6 **% symptom-free @12 mo (pt report)** 1. 21 2. 24 **% symptom-free @12 mo (GP report)** 1. 55 2. 61	**€/symptom-free day (pt report)** 154 (-989 to 1012) **€/pt symptom-free at 12 mo (pt report)** 13,905 (-99,077 to 117,661) **€/pt symptom-free at 12 mo (GP report)** 5,990 (-46,986 to 61,147)	Flattens out near 80% at WTP ~€300 (favors PPI) Sensitive to age; ICER higher for EGT in pts <45 yo	Poor	EGD slightly more effective but much more expensive; when predominant symptom was reflux, PPI was both cheaper and more effective

Reference (type of evidence*)	Outcomes	No of Participants (No of trials)	Participant characteristics	Intervention	Median follow-up	Costs (Range)	Effectiveness (Range)	ICER (95% CI)	CEA Curve	Quality‡	Comments
Klok 2005 (RCT – Netherlands)	1. QALY (RAND-36)	281	Dyspeptic patients ≥18yo at PC practice	1. Test & Treat 2. Prompt EGD	12 mo	**€/patient** 1. 511.02 2. 748.08	**QALY/pt** 1. 0.037 2. 0.032	**€/QALY** 47,412	NA	Poor	Suggests test-and-treat is slightly more effective while being less costly
Makris 2003 (Decision model – Canada)	1. Symptomatic cure	NA	Adults 18-45yo(group A) and >45yo (group B) with uninvestigated dyspepsia	1. Empirical antisecretory 2. Barium meal test 3. Endoscopy 4. Sequential test 5. Serology 6. Empirical eradication 7. Urea breath test	12 mo	**C$/pt (Grp A)** 1. 629.04 2. 748.71 3. 791.13 4. 807.56 5. 775.48 6. 802.41 7. 838.91 **Grp B not reported**	**% cured (Grp A)** 1. 27.14 2. 29.86 3. 30.58 4. 32.00 5. 32.07 6. 32.49 7. 32.84 **Grp B not reported**	**C$/Cure (A)** 2v1. Dominated 3v1. Dominated 4v1. Dominated 5v1. 2,970 6v1. 6,412 7v1. 10,429 **C$/Cure (B)** 7v1. 10,835 7v2. 4,114	NA	Good	
Spiegel 2002 (Decision Analysis – US)	1. Symptomatic cure 2. QALYs	NA	Patients < 45 yo presenting to PCP with upper abd pain, no alarm symptoms, reflux/regurg not dominant	1. T&T→EGD 2. T&T→PPI→EGD 3. PPI → EGD 4. PPI→ T&T→EGD	12 mo	**US$/pt** 1. 1902 2. 1680 3. 1628 4. 1788	**% cured** 1. 75 2. 84 3. 78 4. 84 **QALY** 1. 0.92 2. 0.98	**US$/Cure** 1. 2535 2.1996 3. 2078 4. 2124 **US$/QALY** 1. 2067 2. 1714	NA	Good	Sensitivity analysis confirmed results of base-case scenario.

							3. 0.97 4. 0.98	3. 1678 4. 1824			CoI not reported
Reference (type of evidence*)	**Outcomes**	**No of Participants (No of trials)**	**Participant characteristics**	**Intervention**	**Median follow-up**	**Costs (Range)**	**Effectiveness (Range)**	**ICER (95% CI)**	**CEA Curve**	**Quality‡**	**Comments**
You 2006 (Markov analysis – China)	1. Healed ulcer	NA	Pts presenting w/weekly attacks of heartburn, regurgitation	1. No therapy 2. Empirical PPI 3. Test & Treat 4. Endoscopy	12 mo	**US$/pt** 1. 14 2. 1548 3. 1742 4. 1784	**% Healed** 1. 1.5 2. 72.6 3. 98.7 4. 100	**US$/Healed** 2v1. 2158 3v1. 1778 4v1. 1797	NA	Good	Conclusion that T&T most CE is sensitive to prevalence of *H. pylori*

Appendix F. Quality Assessment of Selected Guidelines

Key Criteria	Guideline Developer, Year				
	AGA, 2008 (GERD)	**ASGE, 2007 (Dyspepsia)**	**ASGE, 2006 (Endoscopic practice for the elderly)**	**ASGE, 2007 (Mgmt of GERD)**	**UMHS, 2007 (GERD)**
Section 1: Primary Criteria					
Rigor of Development: Evidence	Good	Good	Poor	Good	Poor
Rigor of Development: Recommendations	Good	Fair	Poor	Fair	Fair
Editorial Independence	Fair	Poor	Poor	Poor	Good
Section 2: Secondary Criteria					
Scope and Purpose	Good	Good	Good	Good	Good
Stakeholder Involvement	Good	Fair	Fair	Fair	Poor
Clarity and Presentation	Good	Good	Good	Good	Good
Applicability	Fair	Fair	Fair	Fair	Fair
Section 3: Overall Assessment of the Guideline					
How well done is this guideline?	**Good**	**Poor**	**Poor**	**Poor**	**Poor**

Appendix G. Quality Assessment Tools

MED PROJECT	Methodology Checklist: Systematic Reviews and Meta-analyses

Study citation (*Include last name of first author, title, year of publication, journal title, pages*)

MED Topic:	Key Question No.(s):
Checklist completed by:	Date:

SECTION 1: INTERNAL VALIDITY

	In a well conducted systematic review	***In this study the criterion is met:***			
1.1	The study addresses an appropriate and clearly focused question.	YES	NO	UNCLEAR	N/A
1.2	An adequate description of the methodology used is included, and the methods used are appropriate to the question.	YES	NO	UNCLEAR	N/A
1.3	The literature search is sufficiently rigorous to identify all the relevant studies.	YES	NO	UNCLEAR	N/A
1.4	The criteria used to select articles for inclusion is appropriate.	YES	NO	UNCLEAR	N/A
1.5	Study quality is assessed and taken into account.	YES	NO	UNCLEAR	N/A
1.6	There are enough similarities between the studies selected to make combining them reasonable.	YES	NO	UNCLEAR	N/A
1.7	Competing interests of members have been recorded and addressed.	YES	NO	UNCLEAR	N/A
1.8	Views of funding body have not influenced the content of the study.	YES	NO	UNCLEAR	N/A

SECTION 2: OVERALL ASSESSMENT OF THE STUDY

2.1	How well was the study done to minimize bias? *Code: Good, Fair or Poor*	GOOD	FAIR	POOR

2.2	If coded as fair or poor, what is the likely direction in which bias might affect the study results?	
2.3	Are the results of this study directly applicable to the patient group targeted by this key question?	YES NO UNCLEAR N/A
2.4	Other reviewer comments:	

MED Project 2009. Adapted from NICE and SIGN materials.

MED PROJECT	**Methodology Checklist: Randomized Controlled Trials**

Study identification (*Include author, title, year of publication, journal title, pages*)

MED topic:	Key Question No(s):
Checklist completed by:	Date:

SECTION 1: INTERNAL VALIDITY

	In a well conducted RCT study…	***In this study this criterion is met:***
RANDOM ALLOCATION OF SUBJECTS		
1.1	An appropriate method of randomization was used to allocate participants to intervention groups.	YES NO UNCLEAR N/A
1.2	An adequate concealment method was used such that investigators, clinicians, and participants could not influence enrolment or intervention allocation.	YES NO UNCLEAR N/A
1.3	The intervention and control groups are similar at the start of the trial. (The only difference between groups is the treatment under investigation.)	YES NO UNCLEAR N/A
ASSESSMENT AND FOLLOW-UP		
1.4	Investigators, participants, and clinicians were kept 'blind' about treatment allocation and other important confounding/prognostic factors. If the answer is no, describe any bias that might have occurred.	YES NO UNCLEAR N/A
1.5	The intervention and control groups received the same care apart from the intervention(s) studied.	YES NO UNCLEAR N/A
1.6	The study had an appropriate length of follow-up.	YES NO UNCLEAR N/A
1.7	All groups were followed up for an equal length of time (or the analysis was adjusted to allow for differences in length of follow-up).	YES NO UNCLEAR N/A

1.8	What percentage of the individuals or clusters recruited into each group of the study dropped out before the study was completed? What percentage did not complete the intervention(s)?	
1.9	All the subjects were analyzed in the groups to which they were randomly allocated (often referred to as intention to treat analysis)	YES NO UNCLEAR N/A
ASSESSMENT AND FOLLOW-UP, Cont.		
1.10	All relevant outcomes are measured in a standard, valid and reliable way.	YES NO UNCLEAR N/A
1.11	The study reported only on surrogate outcomes. (If so, please comment on the strength of the evidence associating the surrogate with the important clinical outcome for this topic.)	YES NO UNCLEAR N/A
1.12	The study uses a composite (vs. single) outcome as the primary outcome. If so, please comment on the appropriateness of the composite and whether any single outcome strongly influenced the composite.	YES NO UNCLEAR N/A
CONFLICT OF INTEREST		
1.13	Competing interests of members have been recorded and addressed.	YES NO UNCLEAR N/A
1.14	Views of funding body have not influenced the content of the study.	YES NO UNCLEAR N/A
Section 2: Overall Study Assessment		
2.1	How well was the study done to minimize bias? *Code Good, Fair, or Poor*	GOOD FAIR POOR
2.2	If coded as Fair or Poor what is the likely direction in which bias might affect the study results?	
2.3	Are the results of this study directly applicable to the patient group targeted by this topic?	YES NO UNCLEAR N/A
2.4	Other reviewer comments:	

MED Project 2009. Adapted from NICE and SIGN materials.

MED PROJECT	Methodology Checklist: Cohort Studies

Study identification (*Include author, title, year of publication, journal title, pages*)

Review topic:	Key Question No.(s), if applicable:
Checklist completed by:	Date:

SECTION 1: INTERNAL VALIDITY

	In a well conducted cohort study:	***In this study the criterion is:***
1.1	The study addresses an appropriate and clearly focused question.	YES NO N/A
	SELECTION OF SUBJECTS	
1.2	The two groups being studied are selected from source populations that are comparable in all respects other than the factor under investigation.	YES NO N/A
1.3	The study indicates how many of the people asked to take part did so, in each of the groups being studied.	YES NO N/A
1.4	The likelihood that some eligible subjects might have the outcome at the time of enrollment is assessed and taken into account in the analysis.	YES NO N/A
1.5	What percentage of individuals or clusters recruited into each arm of the study dropped out before the study was completed?	
1.6	Comparison is made between full participants and those who dropped out or were lost to follow up, by exposure status.	YES NO N/A
	ASSESSMENT AND FOLLOW-UP	
1.7	The study employed a precise definition of outcome(s) appropriate to the key question(s).	YES NO N/A
1.8	The assessment of outcome(s) is made blind to exposure status.	YES NO N/A

1.9	Where outcome assessment blinding was not possible, there is some recognition that knowledge of exposure status could have influenced the assessment of outcome.	YES NO N/A
1.10	The measure of assessment of exposure is reliable.	YES NO N/A
1.11	Exposure level or prognostic factor is assessed more than once.	YES NO N/A
1.12	Evidence from other sources is used to demonstrate that the method of outcome assessment is valid and reliable.	YES NO N/A
1.13	The study had an appropriate length of follow-up.	YES NO N/A
1.14	All groups were followed up for an equal length of time (or analysis was adjusted to allow for differences in length of follow-up)	YES NO N/A
CONFOUNDING		
1.15	The main potential confounders are identified and taken into account in the design and analysis.	YES NO N/A
STATISTICAL ANALYSIS		
1.16	Have confidence intervals been provided?	YES NO N/A
CONFLICT OF INTEREST		
1.17	Competing interests of members have been recorded and addressed.	YES NO N/A
1.18	Views of funding body have not influenced the content of the study.	YES NO N/A
SECTION 2: OVERALL ASSESSMENT OF THE STUDY		
2.1	How well was the study done to minimize the risk of bias or confounding, and to establish a causal relationship between exposure and effect? *Code Good, Fair, or Poor*	GOOD FAIR POOR
2.2	If coded as Fair, or Poor what is the likely direction in which bias might affect the study results?	
2.3	Are the results of this study directly applicable to the patient group targeted by this topic?	YES NO N/A
2.4	Taking into account clinical considerations, your evaluation of the methodology used, and the	

	statistical power of the study, are you certain that the overall effect is due to the exposure being investigated?	YES NO N/A
2.5	Other reviewer comments:	

MED Project 2009. Adapted from NICE and SIGN materials.

MED PROJECT	Methodology Checklist: Case Series

Study identification (*Include author, title, year of publication, journal title, pages*)

Review topic:	Key Question No.(s), if applicable:
Checklist completed by:	Date:

Section 1: Internal validity				
1.1	The study addresses an appropriate and clearly focused question.	YES	NO	N/A
SELECTION OF SUBJECTS				
1.2	Were the patient characteristics clearly described?	YES	NO	N/A
1.3	Was the likelihood that some eligible subjects might have the outcome at the time of enrollment assessed and taken into account in the analysis (pertinent for screening and diagnostic topics)?	YES	NO	N/A
1.4	Was the study based on a consecutive sample or other clearly defined relevant population?	YES	NO	N/A
1.5	Did all of the individuals enter the study at a similar point in their disease progression?	YES	NO	N/A
ASSESSMENT AND FOLLOW-UP				
1.6	Were outcomes assessed using objective criteria (i.e. medical records) or was blinding used?	YES	NO	N/A
1.7	Was follow-up long enough for important events to occur?	YES	NO	N/A
1.8	Was there a low dropout or withdrawal rate (<20%)?	YES	NO	N/A
CONFOUNDING				
1.9	Were the main potential confounders identified and taken into account in the design and analysis?	YES	NO	N/A
CONFLICT OF INTEREST				
1.10	Competing interests of members have been recorded and addressed.	YES	NO	N/A
1.11	Views of funding body have not influenced the content of the study.	YES	NO	N/A
SECTION 2: OVERALL ASSESSMENT OF THE STUDY				
2.1	How well was the study done to minimize the risk of	GOOD	FAIR	POOR

	bias or confounding, and to establish a causal relationship between exposure and effect? *Code: Good, Fair, or Poor*	
2.2	If coded as fair or poor, what is the likely direction in which bias might affect the study results?	
2.3	Are the results of this study directly applicable to the patient group targeted by this topic?	YES NO N/A
2.4	Other reviewer comments:	

MED PROJECT	Methodology Checklist: Economic Evaluation

Study citation (*Include last name of first author, title, year of publication, journal title, pages*)

MED Topic:	Key Question No.(s):
Checklist completed by:	Date:

Cost
Cost analysis (no measure of benefits)

Economic Evaluations (please circle):

Study Type	*Measurement of Benefits*
Cost minimization	Benefits found to be equivalent
Cost effectiveness analysis	Natural units (e.g., life years gained)
Cost utility analysis	Healthy years (e.g. quality adjusted life years, health years equivalent)
Cost-benefit analysis	Monetary terms

Section 1: Applicability

In a well conducted economic study…		*In this study the criterion is met:*
1.1	The results of this study are directly applicable to the patient group targeted by this key question.	YES NO UNCLEAR N/A
If criterion 1.1 is rated no, the study should be excluded.		
1.2	The healthcare system in which the study was conducted is sufficiently similar to the system of interest in the topic key question(s).	YES NO UNCLEAR N/A

SECTION 2: Study Design, Data Collection, and Analysis

In a well conducted economic study…		*In this study the criterion is met:*
2.1	The research question is well described.	YES NO UNCLEAR N/A
2.2	The economic importance of the research question is stated.	YES NO UNCLEAR N/A

2.3	The perspective(s) of the analysis are clearly stated and justified (e.g. healthcare system, society, provider institution, professional organization, patient group).	YES	NO	UNCLEAR	N/A
2.4	The form of economic evaluation is stated and justified in relation to the questions addressed.	YES	NO	UNCLEAR	N/A
Methods to estimate the effectiveness of the intervention					
2.5	*Circle one* a. Details of the methods of synthesis or meta-analysis of estimates are given (if based on a synthesis of a number of effectiveness studies). b. Details of the design and results of effectiveness study are given (if based on a single study).	YES	NO	UNCLEAR	N/A
2.6	Estimates of effectiveness are used appropriately.	YES	NO	UNCLEAR	N/A
2.7	Methods to value health states and other benefits are stated.	YES	NO	UNCLEAR	N/A
2.8	Outcomes are used appropriately.	YES	NO	UNCLEAR	N/A
2.9	The primary outcome measure for the economic evaluation is clearly stated.	YES	NO	UNCLEAR	N/A
2.10	Details of the subjects from whom valuations were obtained are given.	YES	NO	UNCLEAR	N/A
2.11	Competing alternatives are clearly described.	YES	NO	UNCLEAR	N/A
Methods to estimate the costs of the intervention					
2.12	All important and relevant costs for each alternative are identified.	YES	NO	UNCLEAR	N/A
2.13	Methods for the estimation of quantities and unit costs are described.	YES	NO	UNCLEAR	N/A
2.14	Quantities of resource use are reported separately from their unit costs.	YES	NO	UNCLEAR	N/A

2.15	Productivity changes (if included) are reported separately.	YES	NO	UNCLEAR	N/A
2.16	The choice of model used and the key parameters on which it is based are justified.	YES	NO	UNCLEAR	N/A
2.17	All costs are measured appropriately in physical units.	YES	NO	UNCLEAR	N/A
2.18	Costs are valued appropriately.	YES	NO	UNCLEAR	N/A
2.19	Outcomes are valued appropriately.	YES	NO	UNCLEAR	N/A
2.20	The time horizon is sufficiently long enough to reflect all important differences in costs and outcomes.	YES	NO	UNCLEAR	N/A
2.21	The discount rate(s) is stated.	YES	NO	UNCLEAR	N/A
2.22	An explanation is given if costs and benefits are not discounted.	YES	NO	UNCLEAR	N/A
2.23	The choice of discount rate(s) is justified.	YES	NO	UNCLEAR	N/A
2.24	All future costs and outcomes are discounted appropriately.	YES	NO	UNCLEAR	N/A
2.25	Details of currency of price adjustments for inflation or currency conversion are given.	YES	NO	UNCLEAR	N/A
2.26	Incremental analysis is reported or it can be calculated from the data.	YES	NO	UNCLEAR	N/A
2.27	Details of the statistical tests and confidence intervals are given for stochastic data.	YES	NO	UNCLEAR	N/A
2.28	Major outcomes are presented in a disaggregated as well as aggregated form.	YES	NO	UNCLEAR	N/A
2.29	Conclusions follow from the data reported.	YES	NO	UNCLEAR	N/A
2.30	Conclusions are accompanied by the appropriate caveats.	YES	NO	UNCLEAR	N/A

SECTION 3: sensitivity Analysis					
In a well conducted economic study…		*In this study the criterion is met:*			
3.1	The approach to sensitivity analysis is given.	YES	NO	UNCLEAR	N/A
3.2	All important and relevant costs for each alternative are identified.	YES	NO	UNCLEAR	N/A
3.3	An incremental analysis of costs and outcomes of alternatives is performed.	YES	NO	UNCLEAR	N/A
3.4	The choice of variables for sensitivity analysis is justified.	YES	NO	UNCLEAR	N/A
3.5	All important variables, whose values are uncertain, are appropriately subjected to sensitivity analysis.	YES	NO	UNCLEAR	N/A
3.6	The ranges over which the variables are varied are justified.	YES	NO	UNCLEAR	N/A
SECTION 4: CONFLICT OF INTEREST					
In a well conducted economic study…		*In this study the criterion is met:*			
4.1	Competing interests of members have been recorded and addressed.	YES	NO	UNCLEAR	N/A
4.2	Views of funding body have not influenced the content of the study.	YES	NO	UNCLEAR	N/A
SECTION 5: OVERALL ASSESSMENT					
5.1	**How well was the study done to minimize bias?** ***Code: Good, Fair or Poor***	GOOD		FAIR	POOR
5.2	If coded as fair or poor, what is the likely direction in which bias might affect the study results?				

5.3	Other reviewer comments:	

MED Project 2011. Adapted from BMJ, NICE, and the Consensus on Health Economic Criteria (CHEC).

MED PROJECT	**Methodology Checklist: Guidelines**

Guideline citation *(Include name of organization, title, year of publication, journal title, pages)*

MED Topic:	Key Question No.(s), if applicable:
Checklist completed by:	Date:

SECTION 1: PRIMARY CRITERIA

To what extent is there		***Assessment/Comments:***
1.1	**RIGOR OF DEVELOPMENT: Evidence** • Systematic literature search • Study selection criteria clearly described • Quality of individual studies and overall strength of the evidence assessed • Explicit link between evidence & recommendations *(If any of the above are missing, rate as poor)*	GOOD FAIR POOR
1.2	**RIGOR OF DEVELOPMENT: Recommendations** • Methods for developing recommendations clearly described • Strengths and limitations of evidence clearly described • Benefits/side effects/risks considered • External review	GOOD FAIR POOR
1.3	**EDITORIAL INDEPENDENCE**[5] • Views of funding body have not influenced the content of the guideline • Competing interests of members have been recorded and addressed	GOOD FAIR POOR

5 Editorial Independence is a critical domain. However, it is often very poorly reported in guidelines. The assessor should not rate the domain, but write "unable to assess" in the comment section. If the editorial independence is rated as "poor", indicating a high likelihood of bias, the entire guideline should be assessed as poor.

If any of three primary criteria are rated poor, the entire guideline should be rated poor.				
SECTION 2: SECONDARY CRITERIA				
2.1	**SCOPE AND PURPOSE** • Objectives described • Health question(s) specifically described • Population (patients, public, etc.) specified	GOOD	FAIR	POOR
SECTION 2: SECONDARY CRITERIA, CONT.				
2.2	**STAKEHOLDER INVOLVEMENT** • Relevant professional groups represented • Views and preferences of target population sought • Target users defined	GOOD	FAIR	POOR
2.3	**CLARITY AND PRESENTATION** • Recommendations specific, unambiguous • Management options clearly presented • Key recommendations identifiable • Application tools available Updating procedure specified	GOOD	FAIR	POOR
2.4	**APPLICABILITY** • Provides advice and/or tools on how the recommendation(s) can be put into practice • Description of facilitators and barriers to its application • Potential resource implications considered Monitoring/audit/review criteria presented	GOOD	FAIR	POOR
SECTION 3: OVERALL ASSESSMENT OF THE GUIDELINE				
3.1	How well done is this guideline?	GOOD	FAIR	POOR
3.2	Other reviewer comments:			

[This tool is adapted from the Appraisal of Guidelines Research & Evaluation (AGREE) II tool. The full AGREE II tool is available from http://www.agreetrust.org/resource-centre/agree-ii/]

Description of Ratings: Methodology Checklist for Guidelines

The checklist for rating guidelines is organized to emphasize the use of evidence in developing guidelines and the philosophy that "evidence is global, guidelines are local." This philosophy recognizes the unique situations (e.g., differences in resources, populations) that different organizations may face in developing guidelines for their constituents. The second area of emphasis is transparency. Guideline developers

should be clear about how they arrived at a recommendation and to what extent there was potential for bias in their recommendations. For these reasons, rating descriptions are only provided for the primary criteria in section one. There may be variation in how individuals might apply the good, fair, and poor ratings in section two based on their needs, resources, organizations, etc.

Section 1. Primary Criteria (rigor of development and editorial independence) ratings:

Good: All items listed are present, well described, and well executed (e.g., key research references are included for each recommendation).
Fair: All items are present, but may not be well described or well executed.
Poor: One or more items are absent or are poorly conducted

Appendix H. Payer Policy Summary Table

Payer	Coverage Summary
Medicare NCD Manual (2012), Endoscopy, Section 100.2 (Revised: 10/3/2003)	**Medicare National Coverage Determination, Endoscopy** Endoscopy is a technique in which a long flexible tube-like instrument is inserted into the body orally or rectally, permitting visual inspection of the gastrointestinal tract. Although primarily a diagnostic tool, endoscopy includes certain therapeutic procedures such as removal of polyps, and endoscopic papillotomy, by which stones are removed from the bile duct. *Indications and Limitations of Coverage* Endoscopic procedures are covered when reasonable and necessary for the individual patient. ***CMS Region X LCDs (Washington, Oregon, Idaho, Alaska):*** No LCDs identified addressing upper endoscopy.
Aetna CPB number: 0736 (Last review: 11/18/2011)	**Aetna Clinical Policy Bulletin (CPB): Upper Gastrointestinal Endoscopy** I. Aetna considers esophagogastroduodenoscopy (EGD)/upper endoscopy medically necessary for *high-risk screening* in any of the following: A. Persons with chronic (5 years or more) gastroesophageal reflux disease (GERD) at risk for Barrett's esophagus. (Note: After a negative screening EGD, further screening EGD is not indicated). B. Persons with symptomatic pernicious anemia (e.g., anemia, fatigue, pallor, Red tongue, shortness of breath, as well as tingling and numbness in the hands and feet) to identify prevalent lesions (e.g., carcinoid tumors, gastric cancer). C. Persons with cirrhosis and portal hypertension but no prior variceal hemorrhage, especially those with platelet counts less than 140,000/mm^3, or Child's class B or C disease. II. Aetna considers *diagnostic* EGD medically necessary in any of the following: A. Evaluation of upper abdominal symptoms that persist despite an appropriate trial of therapy. B. Evaluation of upper abdominal symptoms associated with other symptoms or signs suggesting serious organic disease (e.g., anorexia and weight loss) or in persons over 45 years of age.

Payer	Coverage Summary

C. Evaluation of dysphagia or odynophagia.
D. Evaluation of esophageal reflux symptoms that are persistent or recurrent despite appropriate therapy.
E. Evaluation of esophageal masses and for directing biopsies for diagnosing esophageal cancer.
F. Evaluation of persons with signs or symptoms of loco-regional recurrence after resection of esophageal cancer.
G. Evaluation of persistent vomiting of unknown cause.
H. Evaluation of other diseases in which the presence of upper gastrointestinal (GI) pathological conditions might modify other planned management (e.g., persons who have a history of ulcer or GI bleeding who are scheduled for organ transplantation, long-term anti-coagulation, or long-term non-steroidal anti-inflammatory drug therapy for arthritis, and those with cancer of the head and neck).
I. Evaluation of familial adenomatous polyposis syndromes.
J. Confirmation and specific histological diagnosis of radiologically demonstrated lesions:
    1. Gastric or esophageal ulcer
    2. Suspected neoplastic lesion
    3. Upper tract stricture or obstruction
K. Evaluation of GI bleeding:
    1. For persons with active or recent bleeding
    2. For presumed chronic blood loss and for iron deficiency anemia when the clinical situation suggests an upper GI source or when colonoscopy results are negative
L. Sampling of upper GI tissue or fluid.
M. Evaluation of persons with suspected portal hypertension to document or treat esophageal varices.
N. Evaluation of acute injury after caustic ingestion.
O. Evaluation of dyspepsia when any of the following is present:
    1. Chronic GI bleeding
    2. Epigastric mass
    3. Iron deficiency anemia
    4. Persistent vomiting
    5. Progressive difficulty swallowing
    6. Progressive unintentional weight loss
    7. Suspicious barium meal (upper GI series)
P. Diagnosis of irritable bowel syndrome when other studies (e.g.,

Payer	Coverage Summary

colonoscopy, enterosocpy, ileoscopy, capsule endoscopy, and flexible sigmoidoscopy) have negative results.

Q. Differentiation of Crohn's disease from ulcerative colitis in indeterminate colitis.

III. Aetna considers ***therapeutic*** EGD medically necessary in any of the following:

A. Banding or sclerotherapy of varices.
B. Dilation of stenotic lesions (e.g., with trans-endoscopic balloon dilators or dilation systems using guide wires).
C. Management of achalasia by means of botulinum toxin, balloon dilation
D. Palliative treatment of stenosing neoplasms by means of laser, multi-polar electrocoagulation, stent placement.
E. Placement of feeding or drainage tubes (peroral, percutaneous endoscopic gastrostomy, percutaneous endoscopic jejunostomy).
F. Removal of foreign bodies or selected polypoid lesions.
G. Treatment of bleeding lesions such as ulcers, tumors, and vascular abnormalities by means of electrocoagulation, heater probe, laser photocoagulation, or injection therapy.

IV. Aetna considers ***sequential or periodic*** EGD medically necessary in any of the following:

A. Surveillance of persons with Barrett's esophagus (BE) without dysplasia. For persons with established BE of any length and with no dysplasia, after 2 consecutive examinations within 1 year, an acceptable interval for additional surveillance is every 3 years.
B. Surveillance of persons with BE and low-grade dysplasia at 6 months. If low-grade dysplasia is confirmed, then surveillance at 12 months and yearly thereafter as long as dysplasia persists.
C. Surveillance of persons with BE and high-grade dysplasia every 3 months for at least 1 year. After 1 year of no cancer detection, the interval of surveillance may be lengthened if there are no dysplastic changes on 2 subsequent endoscopies performed at 3-month intervals.
D. Surveillance of persons with a severe caustic esophageal injury every 1 to 3 years beginning 15 to 20 years after the injury.
E. Surveillance of persons with tylosis every 1 to 3 years beginning at 30 years of age.

Payer	Coverage Summary

F. Surveillance of recurrence of adenomatous polyps in synchronous and metachronous sites at 3- to 5-year intervals.
G. Surveillance of persons with familial adenomatous polyposis starting around the time of colectomy or after age of 30 years.
H. Surveillance of persons with hereditary non-polyposis colorectal cancer.

V. Aetna considers EGD (screening, diagnostic, therapeutic, or sequential/periodic) experimental and investigational for any of the following because its effectiveness for these indications has not been established:
A. EGD for routine screening.
B. Evaluation of symptoms that are considered functional in origin. (There are exceptions in which an EGD may be done once to rule out organic disease, especially if symptoms are unresponsive to therapy).
C. Evaluation of metastatic adenocarcinoma of unknown primary site when the results will not alter management.
D. Repeat EGD for persons with a prior normal EGD if symptoms remain unchanged.
E. Routine evaluation of abdominal pain in children (i.e., without other signs and symptoms suggestive of serious organic disease).
F. Evaluation of radiographical findings of:
1. Asymptomatic or uncomplicated sliding hiatal hernia
2. Deformed duodenal bulb when symptoms are absent or respond adequately to ulcer therapy
3. Uncomplicated duodenal ulcer that has responded to therapy
G. Surveillance for malignancy in persons with gastric atrophy, pernicious anemia, or prior gastric operations for benign disease (e.g., partial gastrectomy for peptic ulcer disease).
H. Surveillance of healed benign disease (e.g., esophagitis or duodenal/gastric ulcer).
I. Surveillance during repeated dilations of benign strictures unless there is a change in status.
J. Surveillance of persons with achalasia.
K. Surveillance of persons with previous aerodigestive squamous cell cancer.
L. Surveillance of persons with gastric intestinal metaplasia.

Payer	Coverage Summary
	M. Surveillance of persons following adequate sampling or removal of non-dysplastic gastric polyps.
GroupHealth	No policies identified addressing upper endoscopy for people with symptoms of GERD
Regence BCBS Washington	No policies identified addressing upper endoscopy for people with symptoms of GERD

References

Aetna. (2011). Clinical Policy Bulletin: Upper Gastrointestinal Endoscopy. Retrieved March 5, 2012 from http://www.aetna.com/cpb/medical/data/700_799/0738.html

AGREE Next Steps Consortium. (2009). *Appraisal of guidelines for research and evaluation II: Instrument.* Retrieved May 12, 2011, from http://www.agreetrust.org/?o=1397

ASGE Standards of Practice Committee. (2006). ASGE guideline: Modifications in endoscopic practice for the elderly. *Gastrointestinal Endoscopy, 63*(4), 566-9.

ASGE Standards of Practice Committee. (2007a). Role of endoscopy in the management of GERD. *Gastrointestinal Endoscopy, 66*(2), 219-24.

ASGE Standards of Practice Committee. (2007b). The role of endoscopy in dyspepsia. *Gastrointestinal Endoscopy, 66*(6), 1071-5.

Barkun, A.N., Crott, R., Fallone, C.A., Kennedy, W.A., Lachaine, J., Levinton, C., et al. (2010). A one-year economic evaluation of six alternative strategies for the management of uninvestigated upper gastrointestinal symptoms in Canadian primary care. *Canadian Journal of Gastroenterology, 24*(8), 489-498.

Barton, P.M., Moayyedi, P., Talley, N.J., Vakil, N.B., & Delaney, B.C. (2008). A second-order simulation model of the cost-effectiveness of managing dyspepsia in the United States. *Medical Decision Making*, *28*, 44-55.

Bowrey, D.J., Griffin, S.M., Wayman, J., Karat, D., Hayes, N., & Raimes, S.A. (2006). Use of alarm symptoms to select dyspeptics for endoscopy causes patients with curable esophagogastric cancer to be overlooked. *Surgical Endoscopy, 20*(11), 1725-1728.

Centers for Medicare and Medicaid Services. (2012). Medicare National Coverage Determinations Manual, Section 100.2, Endoscopy. Retrieved March 7, 2012 from http://www.cms.gov/manuals/downloads/ncd103c1_Part2.pdf

Connor, M.J., Weston, A.P., Mayo, M.S., & Sharma, P. (2004). The prevalence of Barrett's esophagus and erosive esophagitis in patients undergoing upper endoscopy for dyspepsia in a VA population. *Digestive Diseases & Sciences, 49*(6), 920-924.

Delaney, B.C., Moayyedi, P., & Forman, D. (2003). Initial management strategies for dyspepsia. *The Cochrane Database of Systematic Reviews,* Issue 3.

Delaney, B., Ford, A.C., Forman, D., Moayyedi, P., & Qume, Michelle. (2008). Initial management strategies for dyspepsia. *The Cochrane Database of Systematic Reviews,* Issue 4.

Duggan, A.E., Elliott, C.A., Miller, P., Hawkey, C.J., & Logan, R.F. (2009). Clinical trial: a randomized trial of early endoscopy, Helicobacter pylori testing and empirical therapy for the management of dyspepsia in primary care. *Alimentary Pharmacology and Therapeutics, 29*(1), 55-68.

Ford, A.C., Qume, M., Moayyedi, P., Arents, N.L.A., Lassen, A.T., Logan, R.F.A., et al. (2005). *Helicobacter pylori* 'test and treat' or endoscopy for managing dyspepsia: An individual patient data meta-analysis. *Gastroenterology, 128*, 1838-1844.

Garcia-Altés, A., Rota, R., Barenys, M., Abad, A., Moreno, V., Pons, J.M.V., et al. (2005). Cost-effectiveness of a 'score and scope' strategy for the management of dyspepsia. *European Journal of Gastroenterology & Hepatology, 17*(7)*,* 709-719.

Giannini, E.G., Zentilin, P., Dulbecco, P., Vigneri, S., Scarlata, P., & Savarino, V. (2008). Management strategy for patients with gastroesophageal reflux disease: A comparison between empirical treatment with esomeprazole and endoscopy-oriented treatment. *American Journal of Gastroenterology, 103*(2), 267-275.

Goswami, B.D., & Phukan, C. (2012). Clinical features of functional dyspepsia. *Journal of the Association of Physicians in India, 60*(Suppl), 21-22.

Kahrilas, P.J., Shaheen, N.J., & Vaezi, M.F. (2008). American Gastroenterological Association Institute technical review on the management of gastroesophageal reflux disesase. *Gastroenterology, 135,* 1392-1413.

Kahrilas, P.J., Shaheen, N.J., Vaezi, M.F., Hiltz, S.W., Black, E., Modlin, I.M., et al. (2008). American Gastroenterological Association Medical Position Statement on the management of gastroesophageal reflux disease. *Gastroenterology, 135*(4), 1383-91, e1-5.

Kjeldsen, H.C., Bech, M., & Christensen, B. (2007). Cost-effectiveness analysis of two management strategies for dyspepsia. *International Journal of Technology Assessment in Health Care, 23*(3), 376-384.

Klok, R.M., Arents, N.L.A., de Vries, R., Thijs, J.C., Brouwers, J.R.B., Kleibeuker, J.H., et al. (2005). Economic evaluation of a randomized trial comparing helicobacter pylori test-and-treat and prompt endoscopy strategies for managing dyspepsia in a primary-care setting. *Clinical Therapeutics, 27*(10), 1647-1657.

Lacy, B.E., Weiser, K., Chertoff, J., Fass, R., Pandolfino, J.E., Rickter, J.E., et al. (2010). The diagnosis of gastroesophageal reflux disease. *The American Journal of Medicine, 123*(7), 583-592.

Madan, K., Ahuja, V., Gupta, S.D., Bal, C., Kapoor, A., & Sharma, M. P. (2005). Impact of 24-h esophageal pH monitoring on the diagnosis of gastroesophageal reflux disease: Defining the gold standard. *Journal of Gastroenterology & Hepatology, 20*(1), 30-37.

Makris, N., Barkun, A., Crott, R., & Fallone, C.A. (2003). Cost-effectiveness of alternative approaches in the management of dyspepsia. *International Journal of Technology Assessment in Health Care*, *19*(3), 446-464.

Marmo, R., Rotondano, G., Piscopo, R., Bianco, M.A., Russo, P., Capobianco, P., & Cipolletta, L. (2005). Combination of age and sex improves the ability to predict upper gastrointestinal malignancy in patients with uncomplicated dyspepsia: A prospective multicentre database study. *American Journal of Gastroenterology, 100*(4), 784-791.

Methods Guide for Effectiveness and Comparative Effectiveness Reviews. AHRQ Publication No. 10(11)-EHC063-EF. Rockville, MD: Agency for Healthcare Research and Quality. August 2011. Chapters available at: http://www.effectivehealthcare.ahrq.gov/index.cfm/search-for-guides-reviews-and-reports/?productid=318&pageaction=displayproduct

Rossi, A., Bersani, G., Ricci, G., Defabritiis, G., Pollino, V., Suzzi, A., et al. (2002). ASGE guidelines for the appropriate use of upper endoscopy: Association with endoscopic findings. *Gastrointestinal Endoscopy, 56*(5), 714-719.

Scottish Intercollegiate Guidelines Network (SIGN). (2009). *Critical appraisal: Notes and checklists***.** Edinburgh: SIGN**.** Retrieved November 15, 2010, from http://www.sign.ac.uk/methodology/checklists.html

Sobieraj, D.M., Coleman, S.M., & Coleman, C.I. (2011). US prevalence of upper gastrointestinal symptoms: A systematic literature review. *American Journal of Managed Care, 17*, e449–e458.

Spiegel, B.M.R., Vakil, N.B., & Ofman, J.J. (2002). Dyspepsia management in primary care: A decision analysis of competing strategies. *Gastroenterology, 122*(5), 1270-1285.

Tack, J., Talley, N.J., Camilleri, M., Holtmann, G., Hu, P., Malagelada, J.R., et al. (2006). Function gastroduodenal disorders. *Gastroenterology, 130*(1), 1466-1479.

University of Michigan Health System (UMHS). (2007). *Gastroesophageal reflux disease (GERD).* Ann Arbor (MI): University of Michigan Health System. Retrieved February 1, 2012, from http://cme.med.umich.edu/pdf/guideline/GERD07.pdf

Vakil, N., van Zanten, S.V., Kahrilas, P., Dent, J., Jones, R., & the Global Consensus Group. (2006). The Montreal definition and classification of gastroesophageal reflux disease: A global evidence-based consensus. *American Journal of Gastroenterology, 101*(8), 1900-1920.

Veldhuyzen van Zanten, S.J., Thomson, A.B., Barkun, A.N., Armstrong, D., Chiba, N., White, R.J., et al. (2006). The prevalence of Barrett's oesophagus in a cohort of 1040 Canadian primary care patients with uninvestigated dyspepsia undergoing prompt endoscopy. *Alimentary Pharmacology & Therapeutics, 23*(5), 595-599.

Westbrook, J.I., Duggan, A.E., Duggan, J.M., & Westbrook, M.T. (2005). A 9 year prospective cohort study of endoscoped patients with upper gastrointestinal symptoms. *European Journal of Epidemiology, 20*(7), 619-627.

You, J.H., Wong, P.L., & Wu, J.C. (2006). Cost-effectiveness of helicobacter pylori "test and treat" for patients with typical reflux symptoms in a population with a high prevalence of H. pylori infection: A markov model analysis. *Scandinavian Journal of Gastroenterology, 41*(1), 21-29.